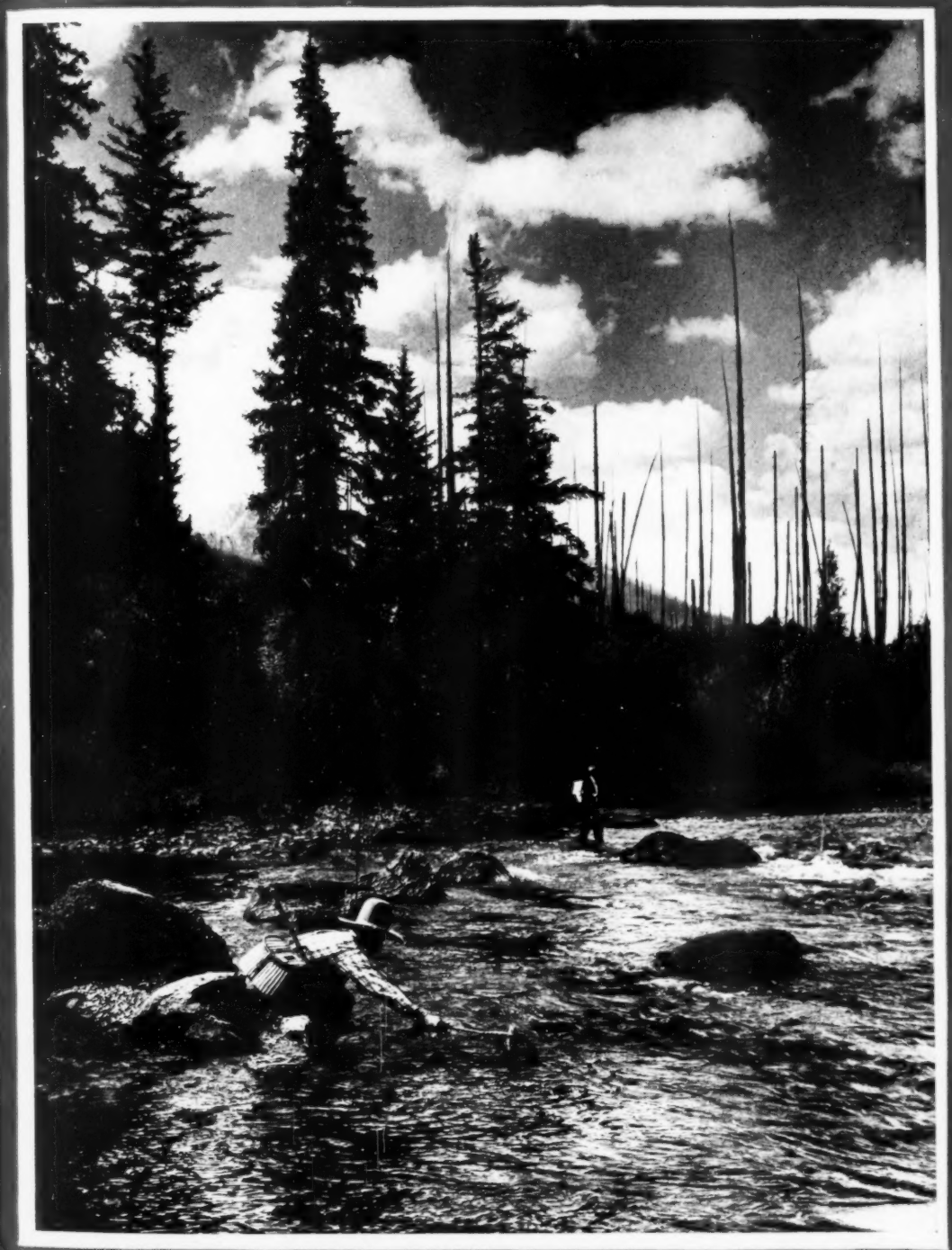
AMERICAN FORESTS



AUGUST 1941 35 CENTS A COPY

"My business is not as usual"

My business is not as usual—not by a long sight.

I don't usually have 600 or more new Army and Navy and defense plants to equip completely and quickly.

And I don't usually have the rush of business that comes when every one else is working on defense.

When a country starts to hurry, about the first thing it calls for is more telephones.

It takes a lot of telephone calls to make a tank or an airplane or a cargo ship.

When a country goes all out to produce, it uses plenty of telephone service. We are all out for defense too—doing our best to keep ahead of the job.

"THE TELEPHONE HOUR" IS BROADCAST EVERY MONDAY. (N.B.C. RED NETWORK, 8 P.M., EASTERN DAYLIGHT SAVING TIME.)

BELL TELEPHONE SYSTEM

AMERICAN FORESTS

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Published monthly by

THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute in the highest degree to the welfare of the nation and its people.

In addition to publication of two magazines — AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational projects in various fields including forest fire prevention, reforestation, protection of fish and wildlife, upstream flood control, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, development of forestry by private endeavor, the teaching of conservation in the schools of the country, promotion of research in timber growing and use and expansion of markets for forest products.

The Association is independent. It has no connection with any federal or state governments. It is non-political and non-commercial. All its resources and income are devoted to the advancement of conservation. It has been so operated since its founding in 1875. All citizens interested in forestry and conservation are eligible for membership.

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AMERICAN FORESTS

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Who's Who

Among the Authors in this Issue

W. C. LOWDERMILK (*Written in the Syrian Desert*), scientist and writer, is Assistant Chief of the Soil Conservation Service of the Department of Agriculture. Widely known here and abroad for his outstanding scientific work, Dr. Lowdermilk has traveled many thousand miles in the Old World pursuing his investigations, and tracing the part played by soil depletion and erosion in the crumbling of the vast empires that cradled ancient civilizations.

Edward Kelly

EDWARD KELLY (*A Canal With a Past Acquires a Future*) is Administrative Assistant to the Superintendent, National Capital Parks. Prior to accepting this post in 1932, he was engaged for twelve years in the production of educational and industrial motion pictures, and in newspaper work in Grand Rapids, Michigan—his native city.

Stanley P. Young

STANLEY P. YOUNG (*The Return of the Musk Oxen*) early affiliated himself with the former Biological Survey (now Fish and Wildlife Service), becoming predatory - animal hunter for the Government. When "Ding" Darling was Director of the Wildlife Bureau, he put Stanley Young in charge of the big game preserves and on the trail of game law violators. Mr. Young tells, as his most exciting single experience, of his capture by a band of Pancho Villa's raiders when, following the drag of a wolf trap, he unknowingly crossed the border into Mexico. After two weeks—expecting to die at any time, —a State Department protest brought his release and a cavalry escort across the border!

HOLLIE LEE MASON (*Indian Arrow-Head*), naturalist and hunter by avocation, was born on the Bayou Bodcaw in northern Louisiana, in the heart of a forest of hardwood and pine. A lawyer by profession, following his service in France during the World War, he served as a captain in the Judge Advocate General's Office of the United States Army and has, for the last ten years, been engaged in legal work for the federal Government.

O. V. MATTHEWS (*Something New Among the Alders*) is an Oregonian. Born at Salem in 1892, he was graduated from Willamette University,—where his father was head of the mathematics department for over forty years—with the class of 1913. Always interested in the woods, and especially of Oregon, Oliver Matthews calls himself a "botanical tramp" for, in his travels up and down the Pacific Coast, he has hobnobbed with most of the well known botanists of the region and has himself run down several rare trees. His hobbies are wood collecting and photography.

Oliver V. Matthews

G. Donald Kennedy

G. DONALD KENNEDY (*As Michigan Sees Its Roadsides*) is a University of Michigan man, class of '21. Majoring in engineering and business administration, he entered actively into public service and directed water supply and aeronautics activities at Pontiac for several years. It was during his tenure of office that the Pontiac Municipal Airport was built—the only airport to receive A1A rating in the United States at the time of its completion. Mr. Kennedy was appointed State Highway Commissioner for Michigan in 1940.

JOSEPH B. PIKE (*A Downeaster's Experience in Timber Growing*) is a native New Englander, born in Bridgton, Maine. Graduated from the Maine School of Forestry in 1927, he received his master's degree in forestry at Yale the next year. He served as District Forester for Connecticut and Virginia for the following six years. Entering the United States Forest Service in 1937 as Associate Forester and stationed in New Hampshire, he helped organize the highly important hurricane hazard reduction work. He is now attached to the Eastern Division of the Service, directing liaison activities in private forestry in Vermont, New Hampshire and Maine.

THE COVER—"One August Morning in Glacier National Park—Fishing in the Flathead River." Photograph by John Kabel.

BIG TREES

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidates in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, see page 412 of the September issue or send for special announcement of this Big Tree hunt. Mail your nominations with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

CALIFORNIA'S GIANT MADRONE

STAGGERING in size is this giant tree, standing in Humboldt County,—another "first" for California, — state of amazing plant growth.

It is nominated as the largest of its kind by Mr. R. H. Menzies, of San Francisco, who gives its dimensions as follows:

Circumference at breast height—27 feet 8 inches
Diameter, at same height—8½ feet
Spread—115 feet

The madrone (*Arbutus menziesii*) belongs to a genus consisting of about twenty species found in various parts of the world. It grows from sea level to 6,000 feet above, ranging along the Pacific coast region from British Columbia to Southern California. Most outstanding feature, especially in younger trees, is its smooth reddish orange bark.

The "Council" Madrone stands in a remote section of southwestern Humboldt County, about a mile from a small settlement called Ettersburg. It stands on the bare shoulder of a ridge and has thus been protected from forest fires. The tree is in prime condition, without ax or fire scars, and in its exposed and elevated position may be seen for miles around.

In the early days, the Indians made it their meeting place for the discussion of tribal matters, — hence the name "Council Madrone."

The "COUNCIL" Madrone

FOR TREE sentiment Indiana has turned in the best story of the month. It is told on page 373 of this issue. If there be those who say that Americans have no deep love for trees, this story is for their reading. It will give them faith. And perhaps it will prompt them—and others who read the story — to send a check to the Meridian Club of Paoli, or to write a letter of appreciation to the Wood Mosaic Company of Louisville, Kentucky, for saving the Cox woods for the time being at least and making it possible, it is to be hoped, to save it permanently. This is a notable public service.

The Cox grove is more than a woods of tall timber. It is a forest sanctuary where still dwell and speak within the compass of a few acres a family of giant hardwoods resplendent in the virginal wealth of passing ages. Here pilgrims, according to their moods and purposes, may gather wisdom in the ways of nature, peace for distraught minds and spirits, and through the veil of high lifted branches they may on clear nights perhaps see a guiding star to the north. There are too few such places left to us. No problem will be solved by cutting the Cox woods. The problem is to save them.

* * * * *

For conservation confusion, the July issue of *Child Life* magazine offers the best story of the month. In a series of articles appearing under the joint authorship of Helen Train Hilles and Eleanor Hard Lake the magazine apparently is endeavoring to enlighten the younger generation as to the fields of public service for which different departments of the federal government were created and the type of work in which they are engaged. This is a worthy educational purpose but the July installment committed high treason from the standpoint of the Department of Agriculture by hanging the national forests on a green apple tree. The installment deals with the Department of the Interior. It leads off:

"The Department of the Interior is our national housekeeper. . . . It watches over our national forests for us. There is terrific danger from forest fires, and the department is splendidly equipped for fire-fighting. They have two-way portable radios to warn of possible fires so they can be stopped as soon as they start, and they even use airplanes to get there more quickly. They are preserving the trees not only for their beauty, but also so that we may have plenty of all the useful things that are made of wood."

As if this were not enough to send temperatures upward in the Forest Service, the text is framed in a layout of pictures largely portraying activities in the national forests. Choice of these is a photograph of an automobile camper, bearing the caption, "National parks are for you to use. A fisherman and his family are camped here in the recreation area of Tonto National Forest, Arizona."

The fact that the national forests have been under the stewardship of the Forest Service of the Department of Agriculture for the past thirty-five years, that they were placed there for good reasons, and that there are fundamental differences between national forests and national parks both in purpose and administration, seems to have escaped the knowledge of both the authors and the editors. Children of today who will be citizens of tomorrow deserve better factual reporting.

* * * * *

Cowboys and summer dudes who ride the public ranges of Colorado this season have a new experience in store for them—the sight of street cars moving across the landscape. The Grazing Service of the Department of the Interior has acquired abandoned street cars from the city of Denver and is putting them to use as mobile CCC side camps.

"When completed," the announcement states, "the units will be composed of a kitchen-dining car, bunk cars, and wash room and storage car, with all the comforts of home for a group of enrollees assigned to the Grazing Service to develop public range areas in western United States.

"These units, which can be developed at a small cost, are superior in many ways to the usual tents or portable buildings used and still have the advantage of removal from one area to another as projects are completed."

Ona Butler

Editor.

Written in the Syrian Desert

By W. C. LOWDERMILK

Photographs by the Author

Out of the land of Mesopotamia came the stories of Noah and the Ark, of Jonah and Ninevah, of the Tower of Babel. Here also was the traditional site of the Garden of Eden. During the past seven thousand years eleven empires have risen in this ancient land to great populations, only to fall when irrigation systems, during wars and invasion, were destroyed by silt and the land returned to desert and the cities famished. In this land today Bedouins with their animals and goat skin water bags travel many miles to draw water from scattered wells. This one is near Palmyra, in Syria

Reflections of an American Conservationist on the Rise and Fall of Civilizations in Biblical Lands, Where War Again Rages

In seven weeks during 1939, the distinguished author, who is soil explorer and assistant chief of the Soil Conservation Service of the Department of Agriculture, traveled nearly 7,000 miles across Algeria, Tunisia, Lybia and into Egypt and Palestine, following the route of the Children of Israel. His purpose was to unveil for science the great part played by soil erosion in the crumbling of the empires of the Ancient World. His findings have been tremendously important and have greatly influenced the conduct of our present-day battle against the forces of erosion and soil depletion.

The then peaceful Syrian desert, from which Dr. Lowdermilk wrote, has become a theatre of destructive war. It covers a vast lake of oil, coveted by the warring nations. For this reason, what Dr. Lowdermilk has to say of the present and past of this graveyard of civilizations is of particular interest today.

SINCE the beginning of history, great armies have fought for control of the ancient and fertile farm lands of the Near East. Again the struggle is on, but this time nations want control of the oil that underlies the "Garden of Eden."

The Tigris-Euphrates Valley, now called Iraq, cradled the infancy of early civilization but wars made it a graveyard of civilizations. Here, during the past 7,000 years, eleven empires have risen and fallen. The infant Iraq, the twelfth nation to occupy this "Cradle of Mankind," was born after the World War and has only recently been weaned from Great Britain, its mandated mother. It has had a stormy babyhood with many *coup d'etats* and some thirty different prime ministers.

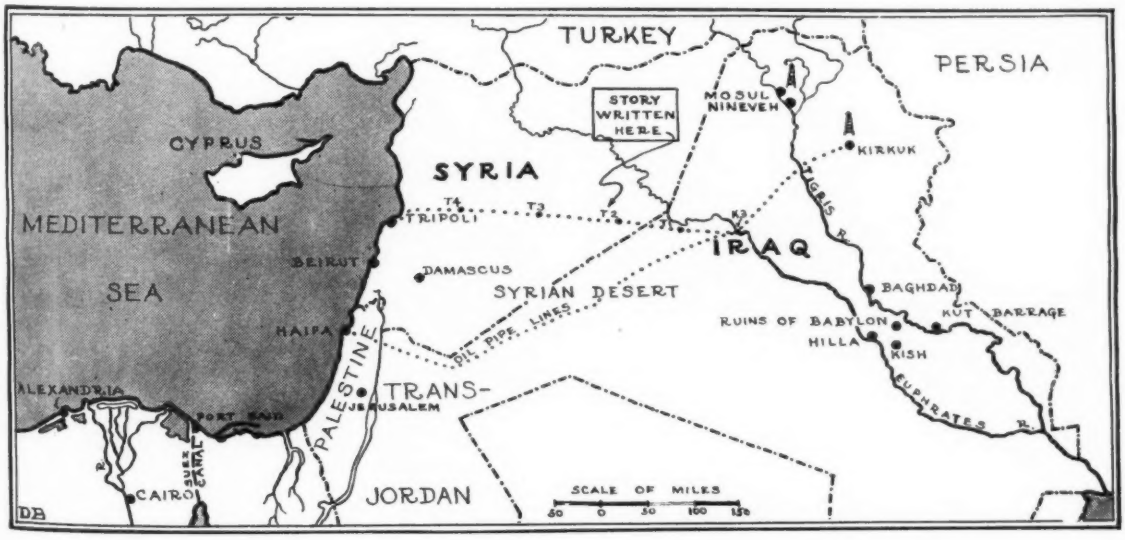
Underneath the traditional "Garden of Eden" site lies a vast lake of oil, sufficient in quantity and quality to feed for many generations the hungry machines of the economic empire which the Germans aspire to create. From this coveted lake of oil, $50,000,000 pipe lines cross the Syrian Desert steppe to the Mediterranean, 650 miles away. One branch ends in the sea at Tripoli, Syria, and the other at Haifa, Palestine, where they discharge directly in holds of ships.

Over this great desert we found no road leading out from Damascus, that oldest inhabited city in the world, via Palmyra to Baghdad. No water, gas, food, or shelter can be found on this northern desert. One follows the compass, the stars, or desert tracks unless he is granted, as we were, the hospitality of the Iraq petroleum pumping stations which force some 4,000,000 tons of oil each year westward to the Mediterranean.

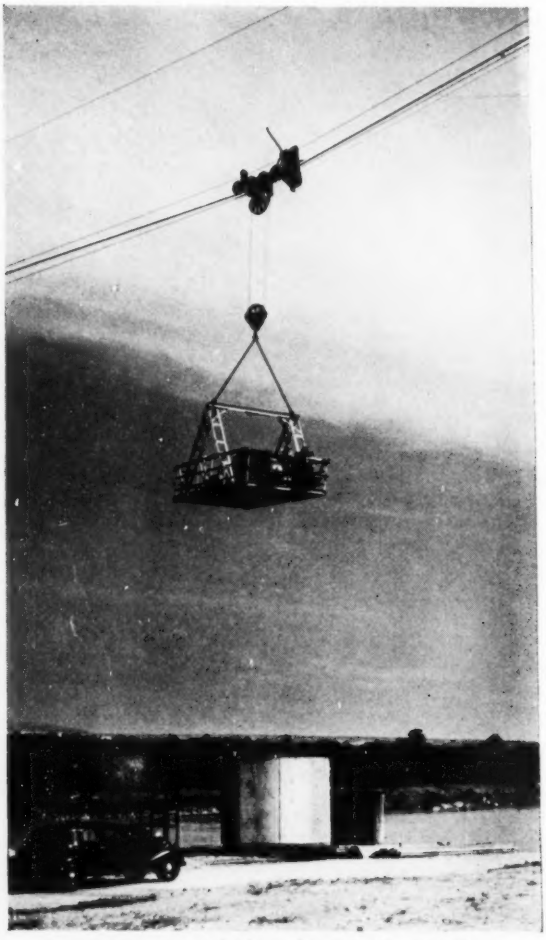
The Syrian Desert during the long dry summers is a blazing oven from which the dread *Khamsin,* or choking dust storms, swept westward as far as the Mediterranean. But during the winter rainy season, the desert becomes a green carpet from horizon to horizon. The soils are mushy when wet and bog down cars which venture forth, as we learned from experience. A belated rain overtook us and we were soon stuck in a sea of mire. We were deeply indebted to the hospitality of the Iraq petroleum pipe line officials who sent trucks to pull us out and supply our needs in their compounds. With this experience, it required ten days to cross this 650-mile stretch of desert.

While stuck in the mud and also while waiting for the desert to dry at an Iraq petroleum pumping station in the middle of the Syrian Desert, I had time to write down reflections on the destiny of mankind as suggested by the ruins of a glorious past in Mesopotamia.

"Behold, how are the mighty fallen!" For three weeks we visited the sepulchers of early civilizations in the land of Mesopotamia, now known as Iraq, where lie eleven empires which had their day and crumbled to a dreary mosaic of dusty ruins and salty desolation. Here, recent searchlights of archaeology reveal how, for 7,000 years, a portion of the human race went to school under successive conquering invaders, and left its records and artifacts of its handiwork. Fragments of these are still visible today in ruins, in museums, and in relics of abandoned irrigation projects. Prior to this period of schooling in civilization, we lose track of ancestors of the human race in a mysterious antiquity.



Out of this land of Mesopotamia came the stories of the "Flood" and of Noah and the Ark; of Jonah and Ninevah; of the "Tower of Babel" whose ruins are still defiant of the human and physical storms of the centuries which have beat upon it. Here, also, was the traditional site of the "Garden of Eden" when Adam and Eve were food gatherers. Today, it is as barren of vegetation as though shaved with a razor. We surprised an "Adam" of today, trying to bathe in a rain puddle, without a leaf to hide behind. At Kirkuk, we saw what is reputed to be the fiery furnace, into which the three



Since there are no bridges along the Iraq petroleum pipe line over the Tigris and Euphrates rivers, the officials arranged to hoist the author's car onto their freight cable, and it swayed and slid across, dipping close to the flood waters in the center of the wide span

friends of Daniel were flung and walked in the flames. Here, escaping natural gas has been on fire for 3,000 years, indicating the pool of oil underneath. We were able to walk among the flames, but perhaps today they are not as high as in ancient times.

The Biblical story of the "Flood" is verified by an excavated Chaldean tablet, as well as by a thick stratum of silt. We visited Kish, twenty miles from Babylon, on a site occupied about 800 years before the "Flood", and the first capital established after the flood waters receded and peoples began to flourish again in this plain of Mesopotamia. The pottery and artifacts above and below this silt layer show a break in the succession of cultures.

Kish today is a desolate group of mounds, inhabited only by foxes and jackals which make their homes in the prospecting holes left by archaeologists. The great massive ziggurat, or tower of mud bricks, stands neglected and lonely as a Sphinx upon the plain.

And at the ruins of mighty Babylon, subdued as though at a funeral, we gazed upon all that remains of the greatest center of culture and learning known to the ancient world. The only evidence of life in this once-teeming city was a lean gray wolf, shaking his head as though annoyed by a tick in his ear. Casting furtive glances our way, he loped to his lair among the heaps and debris which were once one of the "Seven Wonders of the World," the famous Hanging Gardens of Babylon. How well are the predictions of Jeremiah fulfilled: "And Babylon shall become heaps, a dwelling place . . . without inhabitant." The cities of Baghdad and Hilla have been largely built from the fine burned brick looted from Babylon. These cannot now be made for lack of fuel.

Babylon, founded 6,000 years ago, was more than 3,000 years old when, at the feast of Belshazzar and a thousand of his lords, "the handwriting on the wall" predicted its downfall. Impregnable, fortified, and richly stored with treasure and provisions as it was, yet it was soft within and surrendered to Cyrus in 538 B. C., though remaining a center of culture and luxury until it fell before the conquering army of Alexander the Great in 323 B. C.

"Let him that thinketh he standeth take heed lest he fall," warned the prophet. But Nebuchadnezzar of mighty Babylon, 2,600 years ago, boasts: "That which no king before had done, I did. . . . A wall like a mountain that cannot be moved, I builded . . . great canals I dug and lined them with burnt brick laid in bitumen and brought abundant waters to all the people. . . . I paved the streets of Babylon with stone from the mountains . . . magnificent palaces and temples I have built. . . . Huge Cedars from Mount Lebanon I cut down . . . with radiant gold I overlaid them and with jewels I adorned them."

But the Hebrew prophets of captivity thundered out their denunciations, warning that the cities of Babylon would become: ". . . A desolation, a dry land, and a wilderness, a land wherein no man dwelleth. . . . And wolves shall cry in their castles, and jackals in the pleasant palaces. . . ."

We were deeply moved as we stood upon the paved stones of the great Procession Street about which Nebuchadnezzar boasted, and visualized the stirring events of history which these mute remains might relate. The clear-cut bas-relief of animals on the beautiful brick masonry remain as indifferent to us as to the passing of empires, but we saw in imagination the triumphal processions of conquerers, the bound and sad captives, the loot-laden slaves, marks of magnificent prosperity, luxury and leisure for the few which was based on invasions and conquests, cruelty and the groaning oppressions of millions of wageless human machines to do the work. It is little wonder that Babylon was called "the bloody city".

Archaeologists read to us the story of the rise and fall of civilizations as they dig out the past from the discarded cradles of mankind at Kish, Babylon, Ninevah, Ur of the Chaldees, Ctesiphon, Opis and other ancient capitals. But little notice has been given to a human tragedy of still greater significance to be read in the vast ruins of abandoned irrigation works.

The ruins of Kish — first great capital after the Biblical Flood that overwhelmed the lands of Mesopotamia. A city was here eight hundred years before the Flood, and other cities were built upon this city for thousands of years after the Flood

These heaps and mounds are all that is left of the famous Hanging Gardens of Babylon—one of the seven wonders of the ancient world. Here there were dripping fountains and "air conditioning" two thousand six hundred years ago

This great alluvial plain of Mesopotamia is a garden or a desert, depending entirely upon the maintenance or the neglect of its irrigation canals; for overhead rainfall is insufficient for agriculture. Ancient prosperity depended upon keeping these canals open and free of the silt which comes largely from the steep slopes in the north where nomads have grazed their herds since long before the time of Abraham.

A standing army of slaves was required to toil without ceasing on this endless task of cleaning the canals of silt. Wars were waged and captives brought back in chains for this purpose. Little wonder the captive Jews "sat down by the waters of Babylon and wept"—the task was so hopeless, so unending.

Hundreds, yes, thousands, of miniature mountain ranges of silt, whose tooth-like peaks form irregular skylines, divide this great alluvial plain of Mesopotamia into innumerable ridges set in herring bone pattern, reaching out on both sides of the Tigris and Euphrates rivers. Man-made *Tels,* or mounds of cities built one upon the other over millenia of time, or towering *ziggurats,* built by human hands to worship on high places, melt into insignificance when compared to these mountain ranges of silt. These have mounted up higher and higher as untold millions of slaves and war captives toiled under the lash of oppressors through centuries of time, digging out the silt from canals and carrying it up over ever-mounting banks, and returning for more loads.

For example, our auto travel log enroute from Baghdad to Mosul shows that in a stretch of 106 miles, we passed through ninety-eight of these miniature mountain ranges of silt, sometimes up to fifty feet in height. When the task of cleaning canals became too burdensome, it was found easier to dig a new canal and abandon the old one. Once our road passed through eleven consecutive canals with twenty-two ranges of silt banks. Eleven large ancient canals had thus been abandoned, but the twelfth was a small live one which carried but a streamlet of water to a comparatively small area of land. It is common to cross from three to six abandoned canals beside a small live one.

Growth of ancient civilizations here depended upon enlarging irrigation systems until these lands of Mesopotamia are estimated to have supported populations of from 30,000,000 to 50,000,000 people, as against about 4,000,000 today. Each civilization would become rich, powerful, luxury-loving and soft. Covetous eyes of hungry neighbors, the nomads from surrounding grasslands, were cast toward the rich valley. They swept down repeatedly upon the prosperous cities in this productive plain. Although they conquered, killed and pillaged, it was almost impossible to slay or exterminate such vast populations. It was silt that completed the desolation.

The "Lion of Babylon"—only remaining statue in all the heaps and piles of wreckage which were once the mighty Babylon. The German excavators sent all findings of value to Berlin, leaving only debris

If irrigation canals were not maintained during wars or invasion, neglect soon destroyed their utility because of stoppage with silt. Lands reverted to desert; cities famished. Destruction of the civilization was then swift and sure.

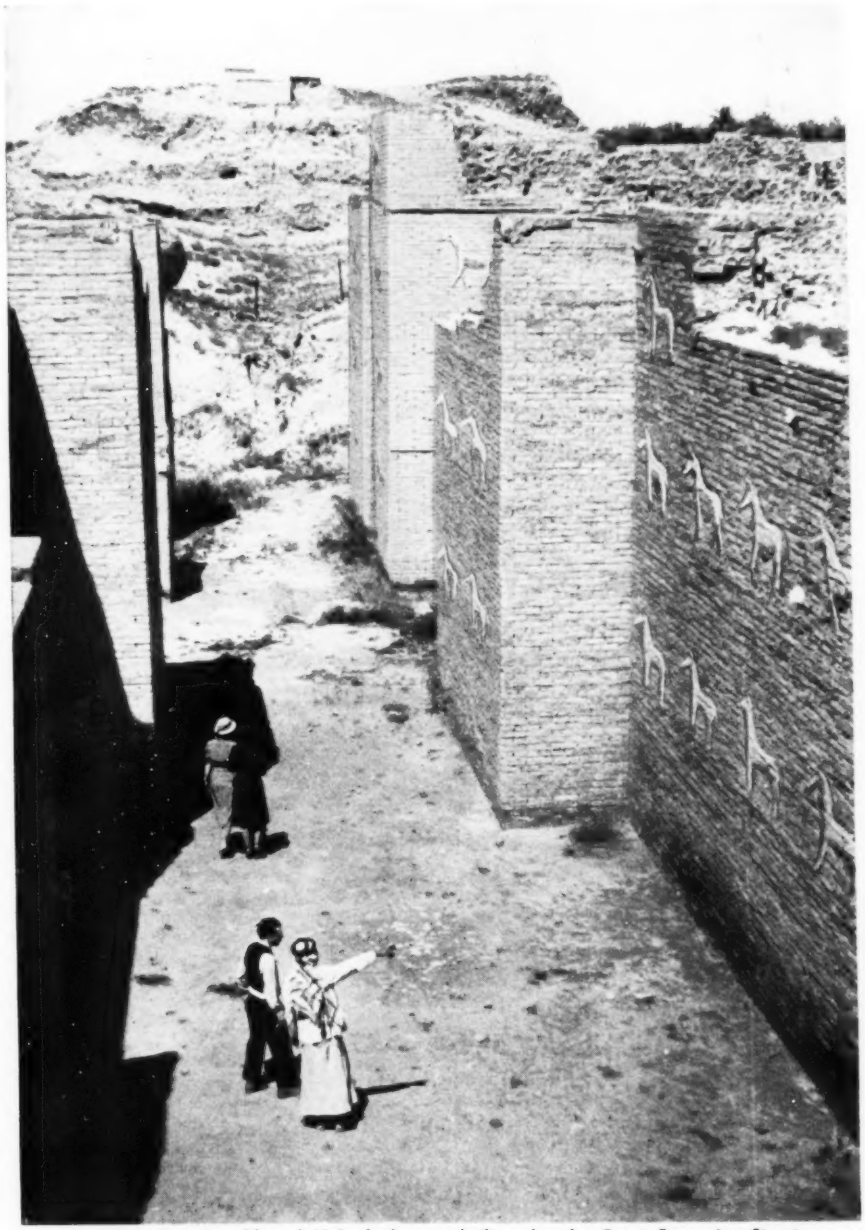
The land and these clogged irrigation canals have remained desert for 500 years since the whirlwind invasion of Tamerlane. Today, there is not the wealth, the population, or the initiative to restore the extensive ancient irrigation works. But with modern construction of con-

crete and power applied to excavation of canals it would be possible to irrigate a more extensive area and to support a greater population today than was done in ancient times. By using the underlying oil for power it is possible to create a more luxurious Eden in Mesopotamia than the traditional "Garden of Eden." While in Baghdad, we attended the dedication of the Kut Diversion Dam, the first to be completed of a number of proposed similar projects to be paid for out of the royalties from oil. But now these royalties are being used for military purposes.

This old land has vast stores of oil, untold wealth for millions in the possibilities of a rejuvenated irrigation; but along with the ruins of a past material prosperity are the now less real ruins of human liberties, initiative and equal opportunities which must have been enjoyed in the childhood of mankind here. Such ruins are the fanatical, distorted and debased conceptions of man's relations to his fellow men, as well as dullness and apathy to human suffering and the sense of fair play. Especially does the degraded status of woman hamper full development of the people who are like a crippled bird trying to fly with one wing. When women have an inferior status as mothers in the home, in society, in religion, and in the state, they do not influence the citizenry in justice, human kindness and loftiness of character as they might. These debased human relationships are ruins which also cry out in these lands today.

In restoring the physical equipment for an expanding nation, will Iraq at the same time develop institutions of liberty and justice? Is it also doomed to rise, only to meet destruction and crumble to dust, ashes and salt, as have other civilizations here? Why have these civilizations risen and fallen? It fills one with consternation and incredulity to stand on these ruins and contemplate the desolation of this graveyard of cities, empires, cultures, and civilizations. The scanty population around Babylon live in a few mud hovels of poverty. The inhabitants are afflicted with illiteracy and low standards of living with no sewerage disposal, and with no water supply except that carried in pots on the head or in slimy goat-skin bags. No trees are planted by canals for shade during scorching summers, or for fuel during the cold winters.

Surrounding these descendants of the ancient civilizations are ruins showing magnificence, opulence and learning. We picked up hand-written baked clay tablets on which ancient merchants recorded their business affairs. A summer palace of 2,600 years ago, outside the walls of Babylon, had cool rooms with dripping fountains and gardens which today are a mass of broken glazed pottery and tile. Why should ancient civilizations have had running water, cooling (*Continuing on page* 386)



The world-famed stables of Nebuchadnezzar, built under the Great Procession Street of Babylon 2600 years ago. Note the animals molded in the brick, still plainly visible

A CANAL WITH A PAS

By

EDWARD KELLY

A familiar scene along the Chesapeake and Ohio Canal during its heyday. Originally fostered by George Washington, this picturesque waterway to "the West" served the nation's capital until 1924

National Park Service

FOR a distance of twenty-two miles between Seneca Creek, a henna-tinted stream which darts from the dancing shadows of a Maryland forest into the widening Potomac, and old Georgetown, western portal of the national capital, the Chesapeake and Ohio Canal Recreational Waterway clings to the rock-hewn sides of cliffs, glides lazily through sleeping meadows, or seeks the shelter of overhanging sycamores, oaks, birches and other trees rising from earth kept cool and moist by the substance of this man-made stream.

If you should rest your paddle while enjoying a canoe trip between the ancient locks which maintain the levels of the canal, and listen with all of your imagination, you might hear, above the chattering of friendly birds, the faint tones of a distant bugle sounding the now forgotten call, "Lock-open". You might hear also the hoofbeats of approaching mules, tandem-hitched and tugging at a tow line attached to a barge-type boat with gayly painted head and after houses, sporting an awning-covered poop and heavy-laden with a hundred-ton cargo bound from the mines and mills of Cumberland to seagoing ships straining at their anchor chains at tidewater Georgetown.

But the sounds you would hear would be the creakings of a ghost — the ghost of an institution that glittered for a brief moment in the moving spotlight of American history, then bowed to the inevitable and sought oblivion behind the curtain of today. No plodding mule nor lusty boatman has made the 184-mile trek from Cumberland to the capital city for many years. The commanding voices and hard fists of Lafe Eichelberger and his fellow boatmen will no longer rule the canal; the mysterious death of Jim Cason, who left his boat at "Big Pool" never to return, may forever remain a mystery; the performances of Bill Kimble and Matt Heiler, who "raced" their boats eighty-five miles through thirty-one locks from Cumberland to Williamsport in thirty-six hours, pausing only to shift mules, will never be equalled; and the wistful boast that "one mule drew 520 barrels of flour twenty miles in a single day," made by the directors of the canal company more than a century ago, may never be re-echoed. As a matter of fact, since the disastrous floods of 1924, even the twenty-two mile section between Seneca and Georgetown has remained, for the greater part, a dry ditch. But, thanks to the Department of the Interior and the National Park Service, this American historical heritage is to be preserved, not as an avenue of trade, but as a recreational waterway dedicated "to the benefit and enjoyment of the people of the United States."

The Chesapeake and Ohio Canal was purchased by the federal government in 1938. The property occupies a narrow right-of-way consisting of 5,253 acres between Washington, D. C., and Cumberland, Maryland. The canal was constructed during the period 1828-1850, but its history dates back to pre-Revolutionary times.

Before the Revolution, internal transportation in America was confined principally to the tidewater reaches of the rivers and bays on the Atlantic coast. After the frontier had extended beyond the Alleghenies, a plan to

AS ACQUIRES A FUTURE

Today on the historic canal canoes have replaced barges and recreationists enjoy the scenic beauty once known only to canal boatmen. Acquired by the federal government in 1938, the canal is being restored to public use

Washington "Star"

provide easy means of communication between the East and the West by a navigable waterway was proposed. As early as 1754, George Washington, then in his early twenties, fostered a system of river and canal navigation in the Potomac Valley. It was through his long and untiring efforts that the Potomac Company was organized in 1785. As the first president of the company, Washington was actively engaged in the project. He frequently visited the working parties assigned to clearing the obstructions from the river channel and building short skirting canals around the treacherous river falls. He resigned this office when he became President of the United States, but his interest in the affairs of the Potomac Company remained active until his death.

In 1802 the Potomac Company canals were substantially completed. Small raft-like boats, propelled by hand with the aid of the river currents, then began to bring furs, lumber, flour and farm produce to Georgetown. Upon reaching the impassable Great Falls of the Potomac the boats entered the company's outstanding skirting canal. Here, on the Virginia banks of the river, a canal 1,200 yards long, twenty-five feet wide and six feet deep conveyed boats through five lift locks over an elevation of more than seventy-six feet. Four other short canals, with a total length of slightly more than three miles, were built by the company at Seneca Falls and Houses Falls, on the Virginia side of the river, and Little Falls and Shenandoah Falls on the Maryland side. Although the canals and locks of the Potomac Company were considered a great engineering accomplishment, the improvements to the river channel were inadequate. Disappointment grew as it became known that after the expenditure of more than $500,000 the navigation of the Potomac was possible only at times of high water.

Influenced largely by the success of the Erie Canal, the popularity of the continuous canal increased rapidly in the second decade of the nineteenth century. There followed in the 1820's and 1830's a great canal building era when the construction of more than 4,000 miles of canals was begun or planned. The failure of the Potomac Company to provide a dependable water route to the West and the feverish canal building of the era contributed greatly to the successful organization of the Chesapeake and Ohio Canal Company in 1828. Anxious to enjoy a large share of the trade with the rapidly growing West, promoters in Maryland, Virginia, and the District of Columbia planned a canal of some 360 miles in length, connecting Georgetown, on the Potomac River, with Pittsburgh, on the Ohio River. On July 4, 1828, John Quincy Adams, then President of the United States, formally began this tremendous undertaking by lifting the first shovelful of earth near Little Falls. On the same day, Charles Carroll, of Carrollton, Maryland, was driving the first spike for the Baltimore and Ohio Railroad in nearby Baltimore, and the race between the canal boat and the Iron Horse was on. In 1831 water was admitted into the first completed division — that section which is now restored between Georgetown and Seneca. Soon afterwards the Chesapeake and Ohio Canal Company began to encounter financial and legal difficulties.

Increased costs and long delays in construction resulted. When the canal reached Cumberland in 1850, the Iron Horse was already in Pittsburgh. The race was lost, and plans to construct the canal across the Alleghenies were abandoned.

Navigation of the canal was begun as the divisions were completed, first from Georgetown to Seneca, in 1831, then to Harper's Ferry, in 1833, to near Hancock, Maryland, in 1839, and finally to Cumberland in 1850. Canal boats carrying coal, flour, grains and lumber were seen on the canal until 1924, when diversion of traffic to the more modern transportation agencies caused its abandonment.

The canal was 185 miles long. The total incline between Georgetown and Cumberland is approximately 605 feet. The difference in elevation on the twenty-two mile restored section between Georgetown and Seneca is about 190 feet. Between Georgetown and Little Falls the canal is approximately eighty feet wide and seven feet deep; above Little Falls it was sixty feet wide and six feet deep. The towpath is generally twelve feet wide.

There were seventy-four lift locks between Georgetown and Cumberland, each having a lift of approximately eight feet. Twenty-three locks are located on the restored Georgetown division. The locks are 100 feet long, fifteen feet wide, and about sixteen feet deep. There are inlet locks at various points along the canal and an outlet lock at the mouth of Rock Creek in Georgetown, which gave entrance to the river from the canal. Many of the stone lockhouses seen on the Georgetown division were begun in 1828 soon after construction of the canal got underway. The locktender was allowed the use of the lockhouse and a garden plot on the adjacent company land, and was paid a small salary.

In the 1870's, during its heyday, as many as 540 boats were navigating the Chesapeake and Ohio Canal. A typical boat, ninety-two feet long and fifteen feet wide, carried from 110 to 120 tons of cargo. From three to five mules were required for the boating "outfit"; two or three were in use whenever the boat was in motion. The relief team was carried "aboard boat" in the forward house, or stable. Feed for the teams was stored in the small center "hayhouse", while the boat captain and his family, or the crew, lived in the small aft cabin.

Family life on a canal boat was not a life of luxury or ease in any sense of the word. During the daytime, when the weather was pleasant, the awning-shaded deck above the afterhouse became the family "living room." It was, in fact, a combined living room, dining room and kitchen. It also served as the laundry, and it was a common sight to view the family wash swinging from a line made fast from stay to stay above the deck as the canal boat moved slowly, but surely, toward its destination.

But, with its drawbacks, life on the canal had its compensations. There were the brief visits and neighborly chats with the crews of passing craft, and the enjoyment of that camaraderie born of common problems, equality of position, and mutual understanding. There were always a pause, especially during upstream travel, at Big Pool for a dance or frolic, at Big Slackwater for a swim or fishing party, the welcome pause to take on family provisions and supplies at Hancock and feed for the mules at Four Locks and Edwards' Ferry. Morals were of a high standard among the canal folk, and families frequently became separated as the mother sought an abode "ashore" to afford the children an opportunity to attend school. True, there was intense rivalry between those who sought leadership in carrying the largest and fastest cargoes, and occasional brawls broke out in the taverns that flourished at the way points, but on the whole the picture of life on the canal was a pastoral scene, punctuated by regularity and orderliness.

In its heyday the canal boasted the movement of 916,000 tons of cargo during a single year, principally coal, lumber, building supplies and grain. Of this total,

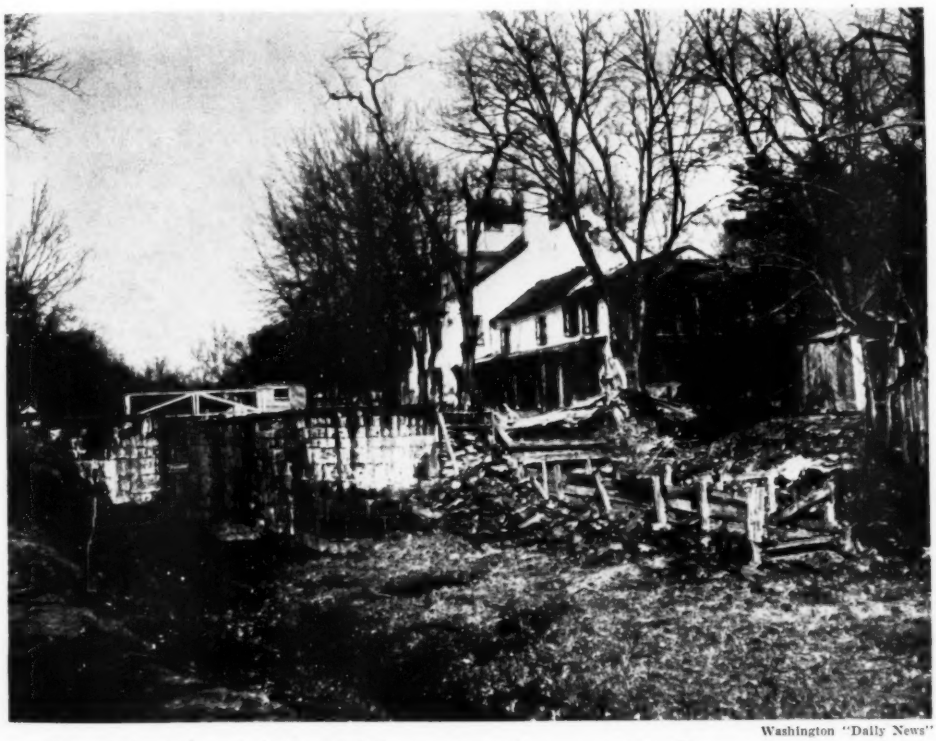
National Park Service

Restoration work on the twenty-two miles of the canal from Washington to Seneca is about completed, opening up this beautiful and historic section to canoeing, boating, hiking, fishing, and, in the winter, ice skating. Here canoeists are shown at the reconstructed lock at Great Falls, Maryland

65,000 tons of freight crossed the aqueduct over the Potomac at Georgetown to be towed to Alexandria, Virginia, seven miles to the south, where the canal boats were lowered through drop locks into the Potomac and towed by steam tug to Indian Head, Maryland, fifty miles downstream.

Each boat carried from 100 to 120-ton cargoes, and one load of 132 tons was recorded. In 1889, boatmen received from eighty-five to ninety cents a ton above payment of toll at the rate of $2.76 a ton. The net profit a trip, after payment of help, feed and other expenses, was approximately $50. Downstream speed, with load, averaged two miles an hour. Upstream, with light boat, a three-mile average could be maintained. Traveling night and day, a round trip could be made in a week's time, and during the open season industrious and efficient boatmen were well remunerated for their labors, according to the prevailing standards of that day. Many were their trials, however, and heavy were their losses during floods and extremes of weather. The final surrender of the canal to the Iron Horse found few good craft afloat in the "old ditch," and those who shed tears wept more in the sense of mourning for an old friend and for the passing of an institution which they knew and loved than for monetary loss.

Restoration of the Georgetown division, extending twenty-two miles between Georgetown and Seneca, was begun by the National Park Service, utilizing the services of the Civilian Conservation Corps and an allotment of Public Works Administration funds, soon after the area was acquired. This work was sufficiently adavanced in September, 1940, to readmit water to this section, which is now open to public use.



Washington "Daily News"

One of the locks and lockhouses before reconstruction was started. There were seventy-four lift locks between Washington and Cumberland, and of these twenty-three have been restored, all in the Georgetown division near the capital city. Many of the old lockhouses are more than a century old

Canoeing, boating, hiking, fishing, picnicking, nature walks and ice skating are welcomed along this section. Canoes and rowboats may be rented at Great Falls and soon will be available at other convenient locations. Privately owned canoes also may be used. Personnel is not available to operate the locks, but equipment is being installed to aid in portaging. By selecting the longer levels, trips of three and four miles in each direction may be made without passing a lock.

The short narrow levels of the canal in Georgetown, once the busy tidewater terminal, afford one of the most picturesque scenes along the canal, including the first four lift locks joined by small canal basins, old Wisconsin Avenue Bridge, and the north abutment of the Alexandria Aqueduct. The feeder canal for the Georgetown level at Lock 5 was originally a part of the old Potomac Canal around Little Falls. Nearby, at the north abutment of the Little Falls dam, the ceremony which launched the construction of the canal was staged on July 4, 1828. The series of locks between Cabin John and Carderock is known as "Seven Locks."

The construction of the canal in this region differs from any other section of the Georgetown division. By utilizing an inactive river channel, blocked from the main stream by the towpath embankments, the early canal engineers saved vast amounts of blasting and excavation. The extended width and increased depth of this flood channel give Widewater the appearance of an unruffled mountain lake, while the high rugged rock formations through which it passes lend added beauty and interest to the scene. Widewater may be reached by a foot bridge which crosses the canal near Old Angler's Inn, near Cropley, Maryland.

At Great Falls, the most popular area on the restored section of the canal, the visitor passes Great Falls Tavern, built between 1828 and 1831, and may hike, or canoe, along one of the longest and most scenic levels of the canal. An excellent view of the Great Falls of the Potomac may be seen from Conn Island, which is reached by a suspension bridge located near the tavern. The section of the canal above Great Falls seems far removed from the hubbub of urban life. The long levels, quiet and not frequently visited, make (*Continuing on page* 398)

THE RETURN OF THE MUSK OXEN

In One of the Most Dramatic Undertakings in Big Game Conservation, These Interesting Mammals of the Bleak Arctic Travel 14,000 Miles to Become Reestablished in Alaska

By STANLEY P. YOUNG

THE musk oxen, one of the most interesting mammals of the bleak Arctic, has returned to Alaska, and while little is known of its disappearance from that region more than a century ago, its return is boldly written in what is perhaps the most dramatic chapter in the annals of big game conservation. Indeed, this remarkable undertaking of reintroducing a game animal into its ancient habitat has few parallels in conservation history.

To reestablish their kind in our northern territory, the musk oxen were transported by boat and by railway a distance of approximately 14,000 miles, the longest and most hazardous journey in the history of transplanting any mammal for restocking purposes. Captured in Greenland, the animals were shipped by boat to Bergen, Norway, and then to New York City. There they were crated and sent to Seattle, Washington, on express railway cars, to again be loaded aboard a boat for Alaska. More than two months were required to move the animals from Greenland to Fairbanks. Despite this record breaking journey, the herd, consisting of thirty-four animals — fifteen males and nineteen females—arrived at its destination in splendid condition.

This was in 1930. Nine years later, in 1939, when the herd was last counted on Nunivak Island, where it was released, it numbered sixty. Biologists have full faith that the animals will continue to increase and in time be of sufficient number to permit restocking of other areas in Alaska.

But before reviewing this amazing undertaking, it may be well to consider the musk oxen and its bleak habitat. The term Arctic, to a great many people, suggests a desolate, ice-bound land—or water—where little life is supported. However true this may at first appear, there is error in such thinking. In our so-called Arctic wastes may be found a profusion of bird and mammal life in season, such as many species of migratory waterfowl, fur-bearers, Arctic hares, lemmings, caribou, wolves and musk oxen.

The greatest concentration of wildlife in the so-called Arctic wastes is to be found during the late spring and summer months, following which nearly all of the mammals either hibernate or, along with the birds, migrate to a more suitable winter habitat. Of the mammals which neither hibernate nor to any great extent migrate from this chosen Arctic home, the musk oxen is capable of contending with some of the bleakest habitats found anywhere.

This picturesque mammal was first discovered in North America by intrepid northern explorers and traders near the close of the seventeenth century. Although, as may be conjectured, the musk

Here, Stanley P. Young, Senior Biologist of the Fish and Wildlife Service, Department of the Interior, reveals for the first time the amazing story of the Government's successful undertaking to reestablish musk oxen in Alaska after an absence of a hundred years. In the September issue of AMERICAN FORESTS the story of Canada's fight for this picturesque mammal as well as a review of conditions surrounding the remaining herds in Greenland, will be presented by E. R. Yarham, the English writer.

ox is related to wild and domestic cattle, it is generally smaller than most breeds, though some of the old animals have weighed 900 pounds. From the tip of its nose to the end of its short, rat-like tail, the musk ox is nearly eight feet long. As with most mammals of the cattle type, the adult bull is larger than the female. The young, one baby calf, is generally born in April or in early May, and this calf is reared in the valleys of the Arctic hills, mountains and tundra flats. Here a profusion of sedges, grasses and shrubs blossom in the fast growing short spring and summer, and from these the herds with the young take their subsistence. These herds are generally small, averaging from five to twelve animals.

Arctic summers usually disappear with great suddenness, leaving little semblance of an autumn, and early snows cover much of the musk oxen food. With this quick disappearance of fresh grasses, the mammal turns to dwarf willows, saxifrage, and other herbaceous plants and grasses which it obtains by pawing through the snow with its broad hoof.

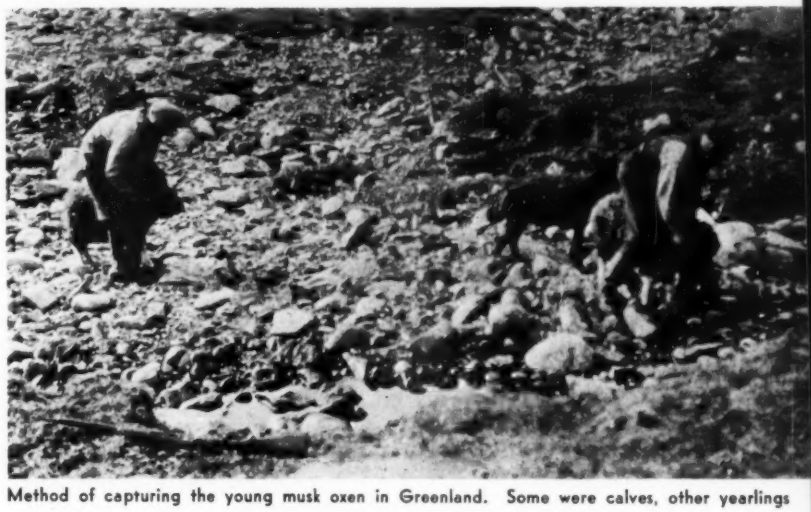
Two of the natural enemies of the musk oxen have been the Arctic wolf and the isolated tribes of primitive man, such as the Eskimo and the Indian. Against these enemies this interesting and formidable appearing Arctic creature held its own in fair numbers. The modern firearm, however, coupled with predation and the take by the northernmost tribes, spelled its doom.

Originally, musk oxen occurred from Alaska eastward to and including Ellesmere Island. Crossing Baffin Bay, and still eastward, it was again encountered in the coastal fringes of Greenland. Adolphus W. Greely, leader of the famous Greely Arctic Expedition in the early eighties, found the animal near old Fort Conger, approximately 1,100 miles north of the Arctic Circle, on Ellesmere Island and points westward. Greely's men captured calves and attempted to tame them with the result that some became docile and tractable even to the extent of hauling in teams. The chief difficulty was to keep the sledge dogs of the expedition from killing them.

Today, the musk oxen has disappeared from much of its original Arctic domain. The use of modern firearms, which against the musk oxen began forty years prior to the advent of the present century, has been the greatest contributing factor. For a time its skin was utilized in the fur trade; northern whaling crews killed many animals for food; then the formidable heads with sharp, curved horns, became highly prized as trophies. Canada, taking cognizance of this condition, some years ago set up a musk oxen sanctuary of approximately 15,000 square miles along the Thelon River east of Great Slave Lake in the Northwest Territory.

Research has failed to find any authenticated occurrence of the musk ox in Alaska

A six-year-old bull, one of the thirty-four animals which made the long trip to Alaska



Method of capturing the young musk oxen in Greenland. Some were calves, other yearlings

Placed in individual crates, the animals began their long sea voyage in whaling boats

since it was first explored by Europeans. The various tribes of natives in the Territory, however, state that the animal did occur there about 100 years ago. Also, remains of the mammal have been found in Alaska; and it is known that portions of the Territory are suitable for musk oxen.

So, in 1927, resident Alaskans presented a memorial through their territorial legislature addressed to the Senate and House of Representatives of the United States requesting funds to purchase a small herd of musk oxen. This plea came to the attention of the late Senator Peter Norbeck of South Dakota, that grand old man of conservation, and Representative C. C. Dickinson of Iowa, later senator from that state. Together with Irving McK. Reed, then a member of the Alaska Game Commission, they obtained favorable action by Congress for an appropriation of $40,000 to be used in obtaining a herd of musk oxen and transporting the animals to Alaska for restocking purposes. This action was approved by the President on May 27, 1930. The agency of the federal government to which this undertaking was entrusted was the Bureau of Biological Survey of the Department of Agriculture, later transferred to the Department of the Interior and, during the past year combined with the Bureau of Fisheries into an organization known as the Fish and Wildlife Service.

By the time the appropriation became available musk oxen in North America had become so reduced in numbers that it was impossible to obtain surplus animals. Finally, contact was made with Johs. Lund of Aalesund, Norway, who was familiar with the technique of capturing musk oxen alive in Greenland. To him, therefore, was given the contract and task of rounding up a herd of thirty-four animals. The Greenland musk oxen differ somewhat from those that formerly occurred on the continent of North America, foremost in that they are slightly smaller. However, from a practical game management standpoint, the differences are negligible.

The majority of these Greenland musk oxen were roped by Mr. Lund and transferred from the mainland in whaling boats to a ship which carried them to Bergen, Norway. They were placed in specially constructed crates which permitted the animals to stand or to lie down in comfort. Grasses and hay taken in the locality of their capture provided suitable food.

On September 6, 1930, the herd of thirty-four animals, half of them calves, the remainder yearlings and two-year-olds, was shipped from Bergen and ten days later arrived in the port of New York. From there they were removed to Athenia, New Jersey, where for thirty-three days, in accordance with federal regulations, they were held in quarantine. This procedure was necessary to be assured that such diseases as foot-and-mouth disease and rinderpest were not present in the herd. During this interval two experts from the Biological Survey were placed in charge of the animals, and American grown alfalfa hay become their main food. About five pounds of hay an animal were daily consumed along with considerable water, the latter probably caused by excessive heat on the Atlantic seaboard and, in addition, to thirst caused by the great environmental change.

At the end of the quarantine period, the animals, still in their individual crates, and well supplied with hay and water, were loaded into steel express cars for their five-day trip to Seattle. At this point they were again placed aboard a boat for the week's journey to Seward, Alaska; then in freight box cars, they made the rail trip northward to College, near Fairbanks. They arrived at this destination on November 4, and on the following day, near the campus of our most northerly institution of higher learning, the University of Alaska, were released into a 7,500-acre pasture—part of the Biological Survey's cooperative reindeer experiment station. This was to be their home for the following six years—years of care, study, and experiment. All of the musk oxen reached College in splendid condition.

Accidental injuries reduced the herd to thirty-two animals shortly after it was placed in the pasture. These, however, soon responded to handling and could be driven easier than reindeer when it was desired to corral them. While under observation at this point, it was found that in spring and fall the animals fed chiefly on grasses and sedges, in summer on shrubs, and in winter on cured grasses, sedges and, to some extent, on lichens. By 1932, the herd was further reduced, two of the animals falling victims to bears.

In April, 1934, the first of the calves were born, and in May and June additional calving took place. There were nine five-year-old cows at this time and seven of them gave birth to calves. Four cows that were four years old did not breed. Of the original thirty-four animals brought to Alaska, ten had died by 1934, leaving twenty-four of the original and five new calves, a total of twenty-nine. Additional calving during the spring of 1935 brought the herd to thirty-two.

It was ascertained up to this time that apparently the musk ox does not breed until four years of age, and calves at five years. It was also found that the gestation period is eight months rather than nine months, as previously believed.

In the summer of 1935 the first of these musk oxen, two adult bulls and two adult cows, were liberated on Nunivak Island in the Bering Sea. Unfortunately, a third cow was killed en route. This island lies approximately twenty-five miles from the mainland and south of the mouth of the Yukon River. It is about forty miles wide and seventy miles long, containing nearly a million acres of superb grazing land. Also, the island is completely free of all predators, such as bears and wolves.

In 1936, when checks indicated the four animals were doing well, it was determined to liberate the remainder of the herd there. The animals were accordingly rounded up and crated—twenty-seven in all. By this time the youngsters trapped in Greenland had matured into real animals and it was with difficulty that they were captured. They were hauled by trucks and freight cars to Nenana, from which point they were transferred to the engine deck of the *SS Nenana* for the long trip down the Yukon River. Arriving at Marshall four days later, the animals were reloaded to a covered barge and, towed by motorship, resumed their journey down the Yukon to its mouth, at Kotlik, thence across Pastol Bay in the

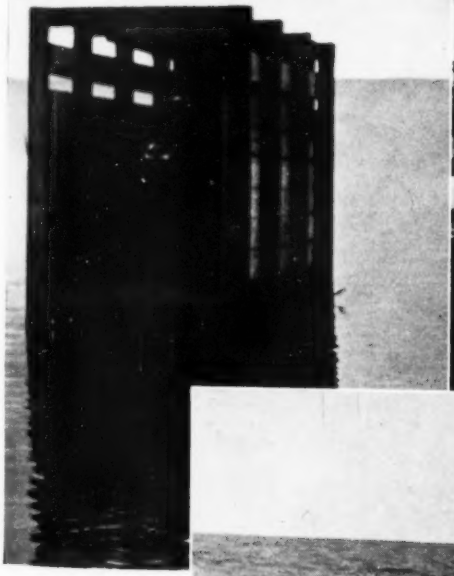
Upper right—Upon their arrival in Alaska in 1930, the herd was placed in a 7,500-acre pasture near College for observation. Here, two years later, the animals demonstrate their picturesque battle formation, used against attacks by wolves, bears and other enemies

Upper left—In 1934, with the herd still in the College pasture, the first calves were born

Right center—In 1936, the animals were crated and placed aboard a large barge for their last voyage

Lower right—Climaxing one of the most dramatic chapters in the annals of big game conservation, the barge and its cargo of musk oxen approach Nunivak Island in the Bering Sea

Lower left—The animals are liberated at the end of their record-breaking journey



Bering Sea to St. Michael. Here they were placed on an open barge, the crates, covered with tarpaulins, being lashed with cables to prevent shifting of the load. On July 14, the barge, in tow of a motorship, headed for the open sea and Nunivak Island.

At this time of year northern Alaska may be visited by sudden and severe storms, so there was great anxiety on the part of us directly concerned with the movement and management of the animals. Three men were assigned to the barge, one to look after the barge itself, the others to care for the comfort of the musk oxen. From the words of one of these men, some idea may be had of the hazards involved in this dramatic trip: "In letting out the towline," he related, "it fouled on an object in the bottom of the bay, perhaps an old 1,000-pound anchor, which was dragged out to Stuart Island, a distance of about fifteen miles, before being dislodged. Heavy seas were encountered outside of St. Michael Bay, and until we reached the shelter of Stuart Island the going was rough. The weight on the towline pulled down the bow of the barge and prevented it riding over the waves, so it plowed through them. The barge was put to considerable strain these three hours. After freeing the towline the barge rode more smoothly."

"When we reached the open sea the barge began to reveal its age. The drift bolts in the bow parted, opening a seam its full width, through which the water poured each time it hit a wave. Other seams began to open, and by 9 a.m., the water stood three feet deep in the well of the hold."

Hand pumps were resorted to and the speed of the towing ship was reduced until a stop was made in the lee of Sand Islands. Here the barge was repaired, and on July 16, the journey resumed to Nunivak. By early in the evening of that day, anchor was made on the east side of the island, a few miles south of Cape Etolin.

A number of Eskimos live on Nunivak Island, and with their cooperation the job of unloading the animals was completed on July 17. The weather fortunately held good, which enabled the men to place the barge well inshore. From this position gang planks were placed onto dry land, and down these planks the crated musk oxen, one by one, were shoved. Released from their crates, the animals soon took to their new and permanent home. A reconnaissance of the island proved that the four musk oxen released in 1935 were definitely established. A check of the Island in 1939 revealed that the initial stock of thirty-four animals received at College from Greenland in 1930 had multiplied to more than sixty.

After a hundred years, the musk oxen have returned to Alaska, wards of the federal government. On Nunivak Island in the Bering Sea, the small herd trapped in Greenland eleven years ago has now grown to more than sixty animals, and biologists believe that in time their number will be sufficient to permit restocking of other areas

Thus Alaska has her musk oxen once again, after probably the longest and most hazardous journey in the history of transplanting any mammal for restocking purposes. The total distance these animals traveled was approximately 14,000 miles. But a sudden storm might have wrecked all the fine work that was so vigorously and effectively sponsored by Senator Norbeck and Representative Dickinson six years previously—in fact, wrecked the whole venture and caused the loss of human life. But such is the risk many enthusiasts in wildlife conservation are willing to assume.

It is hoped that as the Nunivak herd continues to increase a surplus will be produced. This will permit the restocking of other Alaskan areas containing suitable habitat where this interesting mammal of the bleak Arctic may live and breed and thus perpetuate its kind again over much of its old range in that romantic territory.

A DRIVE TO SAVE HOOSIER WOODS

A WHIRLWIND drive has been underway in Indiana for the past several weeks to save one of the finest examples of virgin forest left in the central states. The tract is located near Paoli and is known far and wide as the Cox woods. It is part of a farm entered by the Cox family in 1818. So great was the love of the original Cox settler for this particular wooded section of his farm that he set apart some two hundred acres as a refuge and excluded cutting and hunting. The Cox family down to the present time has continued to protect some one hundred acres of the original virgin stand, but a few weeks ago it became necessary for the executor of the estate to offer the property at auction.

The great size and fine quality of the trees in the Cox tract naturally attracted lumbermen. The threat of having the forest destroyed stirred the whole State of Indiana and led by the Meridian Club of Paoli a campaign to raise private and public contributions to purchase the woods at once got underway. Time was too short, however, to raise the necessary amount before the auction but the Wood Mosaic Company of Louisville came to the rescue by bidding in the tract and announcing that it would hold the property intact for ninety days in order to give the Meridian Club time to raise the necessary money to take over the tract at the purchase price.

All who have seen the Cox woods declare it to be a rare and outstanding forest typifying the original hardwoods of the middle west. Among its species are veterans of walnut, white and red oak, yellow poplar, white ash, beech, hard maple, sycamore, hickory and butternut. Some of these trees are said to tower up to 200 feet and there are walnut and yellow poplar trees forty inches in diameter and clear to the first limb for from sixty to seventy feet. One individual specimen of white oak measures sixty inches in diameter. Under the virgin trees also is a virgin forest floor with ginseng, spice seed, blood root and a great variety of other plants which made up the original forest vegetation.

With ninety days in which to complete its campaign, the Meridian Club, with many other organizations throughout the State cooperating, hope to raise the necessary money to save the tract. That done it plans to donate it to the Forest Service to be preserved and handled as a national area. The tract adjoins historic Morgan Ridge where Morgan raiders were turned back during the Civil War and is in the national forest purchase area where the Benjamin Harrison Memorial Commission has recommended the establishment of a national forest as a memorial to former President Benjamin Harrison.

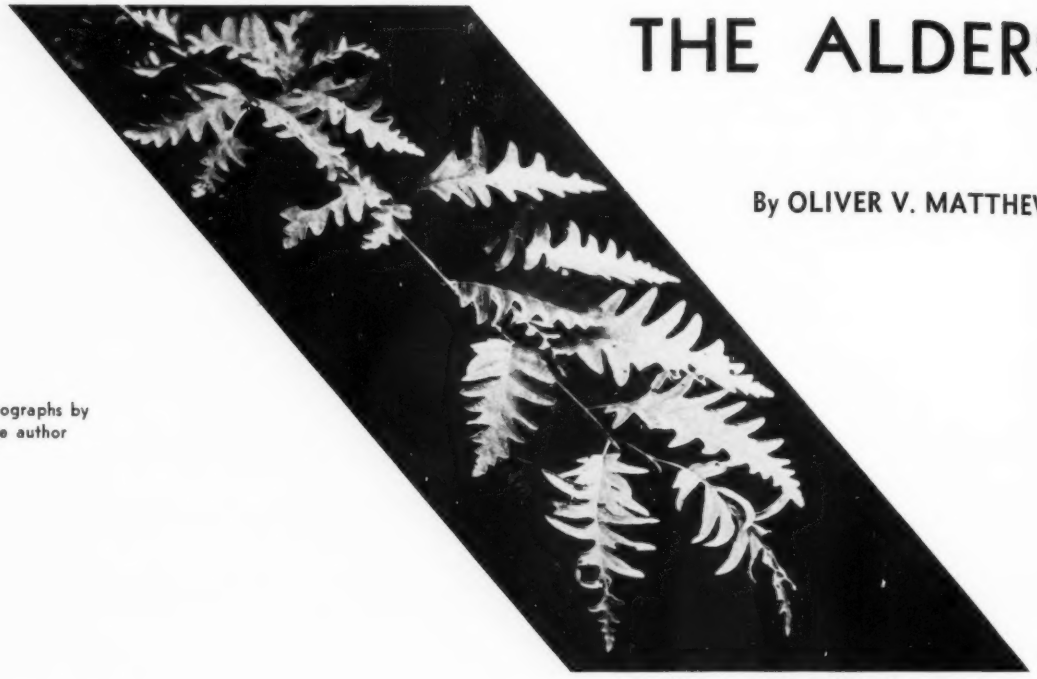
Contributions are being solicited not only from public-spirited persons and organizations in Indiana but in surrounding states. As this issue goes to press it is reported that the National Forest Reservation Commission will provide funds to meet any deficiency in the purchase price of the tract up to one-half of its value. At the same time it was announced that approximately $15,000 has been subscribed by the public. Contributions to complete the purchase should be sent to Mr. Raymond Stout, the Meridian Club, Paoli, Indiana.

Among the giant trees in the Cox Woods—pride of Indiana

SOMETHING NEW AMONG THE ALDERS

By OLIVER V. MATTHEWS

Photographs by the author



A close-up of a branch of the queen of the new clan—the "Fernleaf" tree

WHEN a professor in one of the leading forestry schools of the Pacific Northwest described for the first time in the May, 1939, issue of the *Journal of Forestry* a new variety of alder (*Alnus rubra* Bong), *pinnatisecta* Starker, little did he realize how much interest would be aroused in the mind of a certain "botanical tramp" of that region. Since his article was simply a scientific description of the tree, let me add to the professor's description something of the story of how his tree came to be found, its origin, and its range.

So far the writer has personally seen eleven examples of this new form of alder and he has heard rumors of a twelfth. (This does not include the "Railroad" tree which will be mentioned later.) Perchance somewhere in the Northwest more of these trees may be located, either as new growth on logged-off land, or as part of the virgin forest itself. Since these trees, botanically speaking, are far too valuable to be wantonly cut by the wood collector, or to be dug up by the overly curious, I shall simply designate the different trees in respect to the stations where found, as the "Hilltop" tree or group, the "Brookside" tree or group, both in Washington County, Oregon, the "Lakeside" tree on the shore of Lake Cowichan, B. C., and the queen of the clan, the "Fernleaf" tree, in the Columbia National Forest in Washington, instead of giving their exact locations.

First as to the "Hilltop" group, when I visited the farm where these trees, as described by the professor, are to be found, the owner most obligingly guided me across his pasture through a dense second growth of young alders and hazel. And there was the starting point of this story. From where did this tree come?

For some little time the owner of the land had known about this odd looking tree in his pasture, but he had not given it much thought. And the tree might have gone unheralded but for some friends of his sister, a teacher of nature study in one of the public schools in a nearby city. One day when the sister and her friends were visiting at the farm, the latter took a stroll through the pasture and returned to the house with what they said was a bouquet of "oak" leaves. This aroused the sister's attention, and she gave the "oak" leaves a second look. A brother, knowing about the tree, guided his sister to it and she started an inquiry as to the kind of a tree it might be. In this way it came to the attention of the professor, who described it in the *Journal of Forestry*.

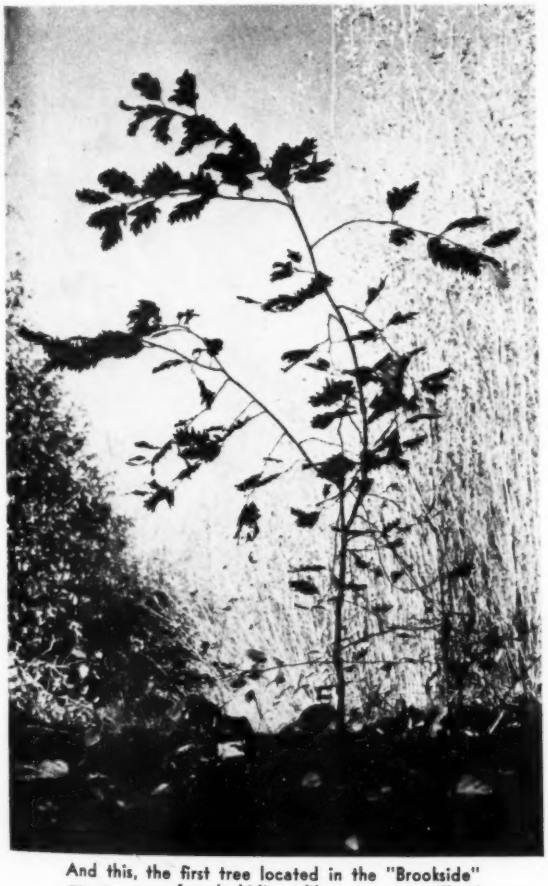
As I gazed in admiration at the tree, the question naturally arose in my mind, "What was its origin?" Nearby was an abandoned logging railway and not far away a loading siding. Did some immigrant logger fresh on the job from the north of Europe empty his pockets as he walked along the track? And did those pockets contain a few seeds brought from his faraway home? At first this conclusion seemed plausible because, up the track, were to be found four more of these "new" alders. (These have since been transplanted to various places.) And then off to the eastward were still another two of the same kind of tree. But those who should know assert most emphatically that the tree did not come from abroad. Some of the local residents believe it to be a cross. But that is most unlikely, for in that

whole region but one species of alder is to be found — the Red Alder (*Alnus Rubra* Bong). The tree could be a mutation, or, using the older and more familiar term, a sport. Or one authority called it an aberrant form or a wandering away from the usual. However, I shall not go into that phase of the question here, but leave that for the experts to determine.

A few more words as to the tree's origin. It is apparent that the original ground cover must have been a dense Douglas Fir forest. The owner of the land further verifies this, saying that originally very few alders were to be found in that vicinity except along the old county road and beside a few open fields. The land, which is rich in iron, was logged in the fall of 1931. And now there stands a tree nineteen and a half feet high and two and seven-tenths inches in diameter breast high! After visiting the site (the elevation of which is about thirteen to fifteen hundred feet), I noticed these odd trees to be growing pretty much in a circle. Could the parent tree, not now in evidence, have been somewhere near the center of this circle, or not far away along the old county road? Also, nearby is to be found an alder with several branches bearing remarkably large cones and not far away another tree laden with a quantity of the usual cones but not having the deeply cut leaves. Could all these trees have had a common parentage?

To add further to the puzzle of where the tree came from and to further complicate (in the writer's mind at least) any theories of the tree's beginning, there was

The discovery tree of the "Hilltop" group, and the owner of the land on which it was found, near the old abandoned logging right-of-way



And this, the first tree located in the "Brookside" group, was found hiding like some woodland nymph, — three miles south of the Hilltop group

blowing, at the time of my first few visits, a strong northeasterly wind. Could the seed have been carried here by an unusually strong wind from the region of the "Fernleaf" tree, described later, a not impossible distance?

To add to its horticultural as well as scientific interest, the "discovery" tree last year was loaded with cones, while another of its younger relatives to the east had but few, and all the rest staminate catkins. Undoubtedly when more mature all the trees will bear heavily of cones, thus adding much to their beauty.

But what of the seed? So far the seed, when tested at one of the world's leading arboretums, has produced seedlings bearing leaves reverting to the original Red Alder form of leaf. Could it be that under favorable conditions the tree would self-pollenize and so carry on this new form of leaf?

The owner of the "Hilltop" group, thinking that some one of his immigrant neighbors from the old country might have been more or less familiar with such a tree in his homeland, took a couple of branches to the neighborhood grange hall and displayed them at a community meeting with the following unexpected result.

"Yes," piped up a small boy, "this very spring I found a tree like that while fishing along a stream to the east of my father's farm."

With this boy, the stream in question was searched up and down, and when it looked as though some mistake had been made, the boy suddenly shouted, "Here is the tree!" Upon examination it was found that it did not have so deeply cut a leaf form as those of the "Hilltop"

A local Forest Service man found this, the "Lakeside" tree. Estimated to be about sixteen years old, it is over thirty feet high and was located on logged-off land about two hundred miles from the original Hilltop group

group. Rather the leaf of the tree designated "Brookside" is characterized by a peculiar pigtail appendage on the end of the leaf, as though the leaf got tired of growing and ended with a curlique instead.

In this place the land had been logged about 1929. And the tree that we found here was a small one measuring sixty-three inches in height and was perhaps an inch in diameter at the base. Several trips to the spot were made for the special purpose of getting photographs. In order to get satisfactory pictures much brush had to be cut and while doing so we discovered another one of these "new" alders, hiding itself among some much taller Red Alders close to the side of the creek. This last tree measured eleven feet tall and was estimated to be about an inch in diameter breast high. It might be that further intensive search along this same creek would reveal more of these new trees. To cheat some local browsing goat of a choice botanical tidbit, the two trees in the "Brookside" group have been transplanted to places of safety, the first to a private arboretum, and the second to the University of Washington Arboretum, near Seattle.

The scene now shifts to the "Lakeside" tree. Here stands a tree, or rather a cluster of trees, since there are five separate trunks with but one common root. These trunks range in diameter, breast high, from four and a half inches to approximately seven inches. The age of the tree was estimated — from increment borings — to be about sixteen years. The approximate height of the tree was thirty feet. In this wild and rugged region, something over two hundred miles from the "Hilltop" group, how did such a tree ever happen to be found in the first place? One of the men connected with the local Forest Service Experiment Station, by the merest chance, stumbled across it on the shores of Lake Cowichan, B. C.

Like the "Hilltop" and "Brookside" trees, this tree is growing on typical logged-off land — land which was logged off about 1916. But instead of in a soil rich in iron, it is growing on a limestone ledge just above the highwater mark at an elevation of about five hundred and fifty feet. This tree too, in years past, has borne considerable seed. However, on being tested by one of the Pacific Coast forest schools, seedlings were produced bearing leaves which reverted back to the original *Alnus rubra* form of leaf.

In the case of this tree there could be a possibility of its being a hybrid or a cross between the Red Alder and the Sitka Alder because both are reported on good authority to be found growing in that region. To add further to the story, the guide told me that for part of the year this spot is swept by strong northwesterly winds and also that somewhere to the northwest, across the lake, had been found some three years previously, another one of these strange trees. Unfortunately, the man who made that discovery had failed to note where the tree stood, so that after three years' time it — the twelfth on our list — remains just a rumor.

Now for the "Fernleaf" tree. A two-day hike was made through a virgin forest of Douglas fir, none of the

A close-up of the beautiful base of the "Lakeside" tree — a common root with five separate trunks

trees less than seven feet in diameter. The trail continued through a typical cedar swamp — in which could be seen great cedars ten and eleven feet in diameter — and finally to a Forest Service Shelter. By the best of good fortune, the man who discovered the tree, the year after the Armistice was signed, was working in that district and the tree in all its beauty was pointed out.

As I stood beneath it and saw the leaves silhouetted against the bright sunshine, it gave me the impression of a large fern, though the discoverer of the tree said it reminded him of an old apple tree. But it is far too graceful and dainty for any such comparison. In fact, its beauty entitles it to be called the queen of the cutleaf alders. When it was measured last summer, it was twenty-two feet high and five and four-tenths inches in diameter, breast high. Its age was estimated from increment borings taken thirty-six inches above the ground, to be at least forty years. It is interesting to note that the tree has about doubled in size since first discovered twenty-one years ago. It grows at an elevation of approximately 1500 feet, in soil of a sand and gravel mixture volcanic in origin. The site where it stands deserves more than passing notice. It has every indication of being an old slide. However, the tree very likely sprang into being many years after the slide took place, for on the slide itself are to be found several silver firs at least two hundred years old; and the steep mountainside above is covered with a dense forest of old growth Douglas fir.

Again the question arises as to the origin of this tree. The man who discovered it has roamed that region for some thirty years and says he has seen no other tree like it. So far as the writer has been able to determine, the tree has borne no fruit. Nor did it have any staminate catkins at the time of two visits to it last summer. This fact alone might make it appear as a hybrid or cross between the Red Alder and the Sitka Alder, for in the immediate vicinity both species are to be found growing quite extensively side by side, or rather one above the other.

The "Fernleaf" tree, queen of the cut-leaf Alders and a dream of woodland beauty, with its discoverer. Its origin in the midst of giant cedars, an unsolved mystery, it is estimated to be over forty years old

A close-up of the base of the Fernleaf tree, showing its characteristic tendency to sprout

Here might be the answer to some horticulturist's prayer for a new tree. At least it should hold possibilities for the botanist specializing in the study of plant genetics. By all means this tree should be protected, propagations made in various scientific arboretums in order that this rarity may not be lost to future generations and in order that its beauty may be made available to all.

One last visit has been made to the "Hilltop" group. The owner reports that another neighbor boy thinks that he, too, has found a "new" alder on their farm. So in company with the owner of the "Hilltop" group this boy was located, and the three of us walked up an old logging railroad right-of-way. And sure enough we found what we called the "Railroad" tree. While the leaves are not as deeply cut as those of the other alders described, it should be put in the same category as the others for the time being at least. It is the writer's belief that probably elsewhere in the Pacific Northwest this peculiar cutleaf form of alder may be found. The hope that if any are found they will (*Continuing on page* 400)

AS MICHIGAN SEES ITS ROADSIDES

By G. DONALD KENNEDY
Michigan State Highway Commissioner

Michigan is justifiably proud of her system of forty-eight beautiful roadside parks and nine thousand miles of scenic highways. This photograph was taken from the lookout tower in Michigamme—the park which overlooks Lake Michigamme in the iron mining country in the Upper Peninsula

MICHIGAN'S state trunk line highway system represents an extensive investment by the people of the state. There is perhaps no section of the state in which the economic welfare of the people is not beneficially affected by this network of transportation facilities. One of the chief benefits is in the form of revenues derived from the tourist business, which is the second industry of our state.

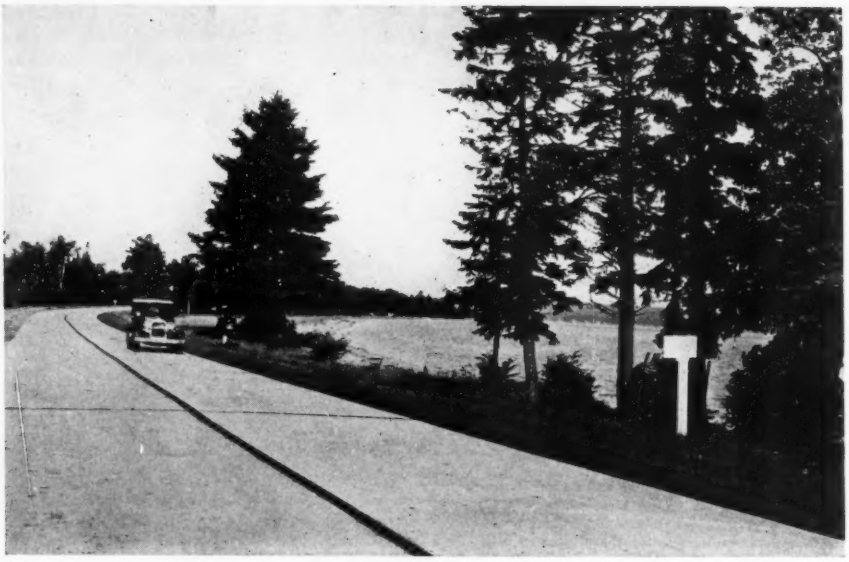
As one means of preserving and increasing tourist business revenues, the Michigan State Highway Department has placed emphasis on a roadside development program. In 1928, when roadside work was first made a part of the highway program, activities were largely confined to the trimming and removal of roadside trees and the supervision of tree trimming operations conducted by public utility companies. Later, an extensive tree planting program was undertaken, the benefits of which are just now becoming apparent. As the foresters engaged became more experienced and familiar with the work as it applied to roadsides, their duties and functions were gradually broadened until today we have established this work as an important part of Michigan's highway program.

Highway safety is a subject that is attracting nationwide attention at this time. The heavy toll of highway accidents has resulted in concerted action on the part of everyone even remotely concerned with the problem. The highway foresters first objective therefore, is the performance of work which will contribute to greater highway safety. In this connection, tree trimming work is designed chiefly to bring about safer driving conditions by providing maximum vision at all locations where accidents might occur and also under-trimming trees to a height sufficient for trucks to operate without crowding into adjacent or opposing traffic lanes.

There are four district tree trimming crews operating full time in the lower half of Michigan under the direction of district foresters. These crews work chiefly on the more heavily traveled roads in the counties comprising the districts. The result of this arrangement is that the trimming is uniform in quality and it is also more economical because the men are expert at their work.

Public interest in shade trees along the highway has frequently in the past, required that trees very close to the pavement edge be left standing following highway improvement work. It now develops that these trees might better have been removed. Often such trees have been involved in serious highway accidents, and the Department is making an effort gradually to remove the more dangerous of them. As a measure of compensa-

All Michigan's roadside parks are equipped to provide safe parking, good drinking water and picnic grounds. The scene above is in a park in Jackson County, about three miles southwest of the city of Jackson while the one below is in Red Cedar Roadside Park in Ingham County—especially adapted to group activity



A spot on the scenic shoreline route along the blue waters of Lake Superior in one of Michigan's roadside parks in the Upper Peninsula

tion, the Department plants two new trees for each tree removed.

The second objective of the forestry program deals with the proper management of all roadside vegetation. From this standpoint, shade trees may be compared to a farm crop—growing to maturity, after which an extended decline takes place until the tree completes its life cycle and eventually dies or for some other reason must be removed. In the case of roadside trees, the shade which they provide is classed as the annual crop yield. Therefore, in order to be assured a future crop, rigid protection and training is necessary for all native roadside growths which will eventually mature into desirable shade trees.

In the Upper Peninsula of Michigan this management activity includes the acquisition of wide timbered highway rights-of-way. When it is realized that the cost of highway snow removal is reduced almost one-half in wooded as compared to unwooded sections, it is easy to appreciate the value of this protection. Also the fact that much of the population in this section depends for its livelihood on revenue derived from the tourist business, makes the preservation of this native natural resource a matter of state-wide concern.

These wide rights-of-way also give to the highway department greater control in regulating the placing of outdoor advertising signs. Often, the greater distance from the road it is necessary to place such signs, the more their erection is discouraged. In 1939 the State Highway Department purchased 446.59 acres of timbered rights of way, bringing total holdings to 4,312.02 acres.

Under the provisions of certain state laws, public utility companies are granted the use of highway rights-of-way for their pole line structures. In applying the provisions of these laws, the highway foresters act as an agent for the public. One of the main items included in these laws provides for the protection of all roadside trees and shrubs. While the Department maintains a cooperative attitude toward the use of highways for pole lines, the primary concern, of course, is protection of roadside trees from excessive tree trimming and removal.

Other factors which the highway forester keeps in mind in negotiating with utility companies are the placing of structures so that they will interfere least with economical maintenance of the roadside, and assigning locations for poles which will intrude least on the orderly appearance of the highway.

Roadside services in the form of picnic tables, roadside parks, springs and scenic turnouts, constitute the third manner of making a utilitarian contribution.

(*Continuing on page* 398)

Enjoying an al fresco dinner cooked at an open fireplace in a park overlooking Saginaw Bay in Huron County

EDITORIAL

THE COX WOODS

IN 1816, a North Carolina Quaker named Joseph Cox, entered a tract of land about two miles east of Paoli, Indiana. That was the year that Indiana was admitted to the Union. Another Quaker, Jonathan Lindley, laid out the town of Paoli in the same year.

In 1854, Great Grandfather Cox died but his estate was never settled. The years rolled by. A grandson, Joseph Cox, lived in the old homestead and for many years protected as the apple of his eye ninety remaining acres of the virgin timber that had covered the whole place. Sawmills came and went. Most of the big poplar and oak of the surrounding country was cut for wagon stock. Timber prices went up and up, but the Cox grove remained untouched. There were occasional windthrows that were removed or an occasional dying monarch that had to be cut to save damage to surrounding timber.

Slim White tells of treeing a 'coon in that woods one night. He was afraid to go after it without Uncle Joe's permission, so he left his dog on guard and went to the old farm house. "Why, no, you can't shoot that 'coon," said the old gentleman, "I want those 'coons left alone." Disconsolately, Slim made his way back to the spot where his dog was conversing with the world in general. Hardly had he arrived when Mr. Cox's nephew trotted up, gun in hand. "Where is that 'coon," he said. "Let's get him." The nephew, sleeping in a back room, had overheard the conversation, slipped out the back window, and came to the woods. Only by such tricks was any hunting possible in the Cox woods.

With the passing years, the woods became a tradition, a connecting link with a dead past of big timber and big mills. They continued to stand as a living monument to one old man's love of the woods and its denizens. A few months ago, Uncle Joe, as he was called locally, passed on. The widely scattered heirs demanded a final settlement of the estate. The executor, no other than Uncle Joe's nephew who got the 'coon, had no choice. Nobody, it seemed, could buy such a valuable piece of timber just to keep. The court ordered it sold.

Timber buyers from a radius of 500 miles flocked in to cruise, measure, estimate, and a few to marvel. Then the public became interested. Late as it was, a hue and cry arose to save the Cox woods from the ax. But the grove was sold on June 9 for $23,000, a price which included about 113 acres of very ordinary second-growth. The Wood Mosaic Company of Louisville, Kentucky, was the successful bidder. However, the company had no desire to be characterized as despoilers. It agreed with a group of local business men — the Meridian Club of Paoli — that they could have ninety days in which to match the purchase price. If they could, Wood Mosaic would be happy to turn over the woods intact and undespoiled.

The Meridian Club forthwith launched a drive to raise funds with which to buy the woods and fifty acres of farm land that lies on U. S. Highway 150, so as to provide public access to the grove. If successful, its plan is to turn the tract over to the Forest Service for protection and administration as a research forest and a source of inspiration for new generations of scientists and children and grown folk.

There is no woods in the middle west like the Cox woods, is a saying in southern Indiana. Magnificent specimens tower to tree heights unseen by few of the modern generation. Walnut—some of them sixty-five feet to the first limb, clean and clear, and over thirty-six inches in diameter—five foot white oaks, six foot poplars, huge ash, maple, beech, all are there, majestic reminders of forest wealth that once was in a land where now too much abandoned and degraded farm land greets the eye. The grove lies on Morgan's Ridge, high tide of Morgan's invasion of Indiana in the Civil War. It is between two main highways, yet the public could pass it by forever and not see it.

But the people of Indiana have not passed it by; nor have they apparently any intention of seeing it destroyed. On Sunday, May 25, when the word had gone abroad that these old giants were due to go, hundreds of people from all over southern Indiana flocked to see it again and to vow that the inspiration of its beauty and majesty shall not pass away from the old hills of southern Indiana. Quickly followed a spontaneous uplift of voices throughout the state to "Save the Cox Woods." Individuals, organizations and the press from one end of the state to the other have joined in the drive to raise the needed funds. It is one of the finest expressions of public tree sentiment to be found anywhere. Contributions of from one dollar to $1,000 are being received. On July 10, a total of $15,000 had been subscribed. If evidence were needed to prove that Hoosiers love their woods, here it is in abundance. May they be successful in saving the Cox Woods.

A DOWNEASTER'S EXPERIENCE IN TIMBER GROWING

By JOSEPH B. PIKE

ABOUT a hundred years ago when the big sawmills were enjoying their heyday in the State of Maine, a small water-driven "up and down" mill was built on the outlet of White's Pond, in South Penobscot. Most of the big mills have vanished with the tall timber they required, but the small mill remains. It has operated almost continuously because a productive, well-managed forest keeps it supplied with logs.

This forest is the result of the foresight and efforts of one man, S. B. Condon, a downeaster of South Penobscot. When the science of forestry was practically unheard of in this country, Mr. Condon started in the logging business by buying woodlands for their pine and spruce stumpage. He was near good markets then as he is now. This was forty years ago when the popular way of logging was to cut all sawlogs, take out smaller trees for the stave or lath mill, and work the very small material into four-foot wood for the lime kilns or brick yards.

After operating for a short time, Mr. Condon became convinced that something was wrong with this method of cutting. He was quick to see that it destroyed for many decades the productivity of the woods. As he expressed it one day last winter: "After a few years of logging I was struck with the idea that trees grow; therefore why not cut only a part of the stand at one time and keep a growing stock which would yield a forest crop every few years. After pondering this situation I decided to change my way of cutting."

This decision has proved to be wise and profitable for Mr. Condon and his community. He has added piece by piece to his woodlots until he now owns nearly 3,000 acres. He gives regular and almost year round employment to six selected men. Annually, neighbors and fellow townsmen receive a gift of 100 cords of firewood — weedings which they cut themselves. A philanthropist? No, a practical businessman making his living from his woodlands and mill—and keenly enjoying it.

At the time Mr. Condon decided to improve his way of cutting, the rest of the nation was being exhorted to cease burning its woodlands by a small group of forest-

"A well-stocked stand gives the highest yield of forest products," says Mr. Condon. This is second-growth spruce, balsam fir and white pine. Low value hardwoods have been removed for fuel

Before the mature trees are removed a new stand is started by natural reseeding, induced by openings in the cover following thinning of inferior species

ers, but there was little other information available on good forest practices. Early in his search for information, however, he obtained a government publication, *A Primer of Forestry,* and later the book *Forestry in New England* by R. C. Hawley and A. F. Hawes. "This book," says Mr. Condon, "has been my woods bible." He adds to his library as new books become available.

Nearly two decades after starting his partial cutting, Mr. Condon was visited by Gifford Pinchot, then chief forester of the United States. He came to buy pulpwood, and remained to admire the stands that had produced it. Others have followed from the large landowners of the state, from the State University, and from the state and federal governments. All come to see and learn rather than advise. Possibly there is a shade of envy, too, for few foresters have had greater success than this downeaster of South Penobscot.

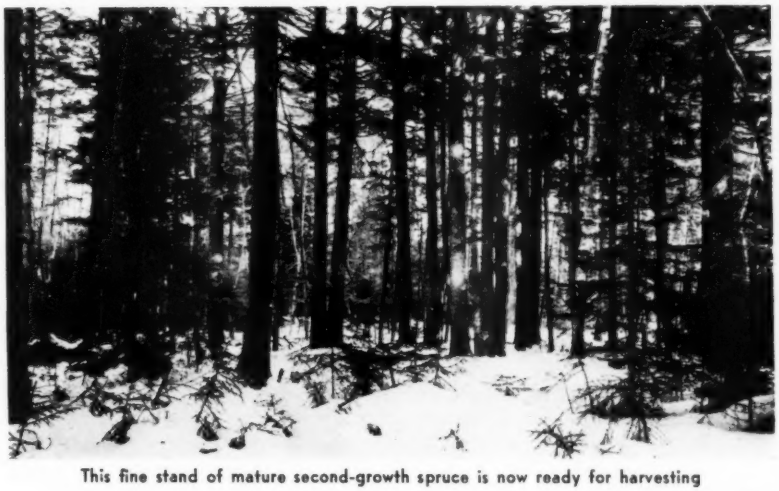
These trees, growing in an area which was logged about twenty years ago, are now ready for the saw

The owner of this productive forest counting the rings on a recently felled spruce

Mr. Condon's forest of 3,000 acres of second growth spruce, balsam fir, white pine and hardwoods yields annually an average of 350,000 board feet of sawtimber. This he saws at his small water-powered mill. And whenever market conditions are favorable he cuts from 100 to 200 cords of pulpwood and about 150 cords of firewood each year. This is in addition to the 100 cords of firewood his neighbors cut for themselves from undesirable hardwoods.

In white pine stands, light selective cutting of mature trees is the usual method of harvesting. For spruce and balsam fir a shelterwood system, in which two cuttings spaced far enough apart to allow the establishment of advance reproduction, are made, has been found to be very effective. Also for spruce and balsam fir, clear-cutting in small blocks of one-fourth or one-half acre has been found to be a good practical method of management.

Like almost every other forest landowner in Maine, Mr. Condon has the problem of keeping undesirable hardwoods out of his stands. He has found that weeding and release cuttings of hardwoods have resulted in greatly increased growth of his more valuable pine, spruce and (*Continuing on page* 395)



This fine stand of mature second-growth spruce is now ready for harvesting

© Rodman Wanamaker

The Smoke Signal

AN INDIAN ARROW-HEAD

By

HOLLIE LEE MASON

WE STILL find traces of where the Indians camped here near the river before the greedy white man drove them beyond the mountains. The other day my neighbor and I hauled one of their ancient grist mills up the hill on our backs. And today, as I climbed up the steep trail, I tried to see in fancy those other days before the booted heel of the paleface had left its marks upon these hills.

I had been hunting squirrels along the western slope of the Blue Ridge since daylight, and it was now late in the afternoon. Hunger urged my leaden feet to hurry up the long trail to home and food. But I was tired, and sat down, my back against an age-old oak. For a while I rested, watching the spiraling smoke of a locomotive out across the Valley of Virginia and the Shenandoah River. Then I closed my eyes and dozed. When I wakened the first thing to come into my vision was the outline of a portion of a small stone which seemed to have been fashioned by human hands. It was on the ground directly in front of me. But the locomotive whistled and I looked away—looked again into the prosperous valley. In a moment I had quite forgotten the stone. When I arose to resume my journey homeward, however, it again caught my eye, and I stooped and picked it up. It was an Indian arrow-head.

For some time I stood there contemplating it. Then the years rolled away and the past rose before me like a dream. Looking out across what had until then been the Loudoun Valley, I saw a vast expanse of country dotted with Indian villages. Its farms had been transformed into dense forests and its broad highways into winding Indian trails. The smoke in the Valley of Virginia, through which the silvery Shenandoah River snaked its way, was from an Indian signal fire. Here and there I could make out a canoe on the river. And as I stepped up to get a better view, a twig snapped and a buck whistled down the glade; a turkey gobbled a little way off; and a gray squirrel came slowly down a big chestnut tree, barking at my intrusion.

I was back with the Indians in the days before the paleface came, a very devil incarnate, into this paradise of Nature's simple children. With them I hunted bison in the valleys beyond the mountains; chased fleet-footed deer through tangled undergrowth and down the sun-flecked glades; shot bearded gobblers with unerring arrows from their high perches in the giant old oaks; speared glimmering fish in the swiftly flowing river; wandered up and down the far reaches of the river and valley; and sat in the glow of the council fires with grave and painted red men, and smoked with them their stout tobacco.

In paint and feathers I wandered with the Indians through the vast empire of forests, hills, valleys and rivers in which they made their home. It was filled with riches dear to an Indian's heart; and there was an ever unfolding panorama of virgin beauty, unspoiled by the desecrating touch of the white man. By every tent and wigwam, in every camp and village, far up the mountain side and deep in the valley, there was peace and contentment. Brave men and courageous women were living life to its complete fullness, surrounded by a world of plenty. There was no poverty, no poor. There was no great wealth. But what one possessed all might use. There were no feeble old men begging food to sustain their miserable lives. There were no frail, anemic women weeping over undernourished babes. There was no unemployment, no vice, no crime. Although there were no laws bound in musty tomes of sheep and buckram, the

rights of all were sacredly preserved. Not a jail raised its hateful walls within the confines of this great empire, which stretched from the frozen tundras of the north to the tropic isles of the south, and from the Atlantic to the Pacific. Although the Christian's God was unknown to them, these bronzed children of hills and forests and plains worshipped the Great Spirit, as gentle, as compassionate, as forgiving, and with as fine a sense of justice as any paleface god yet created. Christ was unknown to them, yet they were Christlike. Gentle, hospitable, kindly and considerate in the extreme to the aged, to the wise and to the stranger within their domains. Life to them was clean and sweet and joyous. Its problems were simple and easily mastered.

Peering through the fog banks of the Atlantic coast, strange shapes were seen upon the storm-tossed waves. White-winged ships filled with palefaces were approaching the peaceful shores of the Indian's ancient home, and peace would vanish to return no more. I saw the paleface ashore, proudly strutting up and down, a long, dangling knife in a tin case tied around his middle, and a peculiar thing like a club under his arm. I saw the child-like, trustful Indian braves greet him, offering their simple presents, the pipe of peace and the hospitality of their lodges.

I saw a great horde of palefaces sweep across the Indian's beautiful paradise. Soon the long knife was dripping red with the blood of Indian braves; and the club-like thing had become an instrument of terror, scattering the panic-stricken Indians far and wide.

But not for long. Soon there appeared above the treetops the smoke of burning homes; and the blood-curdling whoops of enraged Indian braves on the bloody path of war resounded up the hollows and over the hills. Fighting with all the instincts of brave men, the Indian was doing his utmost to protect his wives and children, his home and his country from the despoiling hand of the foreign invader.

But insistent settlers pushed their hurried way from the seaboard ever westward. The creaking of ox yokes and the rattling of wagons broke the sweet peacefulness of these ancient valleys. The bleating of goats, the neigh of horses and the low of cattle filled the valleys and echoed from the hills. The barking of dogs stilled the howling of the wolves and the yap, yap, yapping of the foxes.

The angry swish of arrows mingled with the drowsy hum of insects; and the sullen roar of musketry rolled down the river.

The Indian was doomed.

Bloody years went by, and the unequal contest was over.

Spread before the thin line of mounted braves lay a panorama of virgin beauty as yet undesecrated by the hand of white men

The last of the vanquished Indians slowly plied their way toward the setting sun. Standing silent for a moment on a peak of the western mountains, they gazed back down into the valley from which they had been driven, and with unutterable longing, vainly tried to mark with the eye the site of their childhood home, which they would never see again.

With groans of despair they turned away, and vanished—forever!

Suddenly I realized I was standing before my cabin door. My reverie had ended. And I stood with an Indian arrow-head gripped tightly in my sweating palm.

WRITTEN IN THE SYRIAN DESERT

(*Continued from page* 363)

systems, sewers, paved streets, libraries, exquisite art, sculpture, palatial homes and surplus wealth to line their places of worship with silver and gold? Can it be that this magnificence was built for the few upon oppressions and injustices of the people? Babylon has no counterpart in Iraq today. The glamour of "Arabian Nights" at Baghdad, the capital, disappears in twentieth century daylight. Climate has not changed in any important degree in historical times; the fertile alluvial soils are still productive when watered, and the great twin rivers continue to pour out an abundance of waters, even though silt laden, from the over-grazed, denuded and lofty mountains to the north. How then, can one account for the rise and fall of these civilizations?

Before the dawn of history, the children of Adam and Eve in this region began the long fight between the farmer and the shepherd. In fact, we have a picture of the traditional stone with which Cain, the farmer, killed his brother Abel, the shepherd, who had allowed his herds to invade the crop lands of his brother. This appears to have taken place in the highlands east of Ninevah, where mankind may have first learned dry farming. On the dry steppes on both sides of the Mesopotamia plain are vast areas of splendid grazing lands when rain is plentiful. Here developed sturdy populations, which under strong leadership in time of drought, swooped down like wolves on sheep folds, to snatch food and life from the prosperous farmers of the plain. This contrast in living conditions and hardiness of peoples was a constant hazard to the valley and repeatedly brought destruction of the more mature culture by wilder and more hardy peoples from the steppe.

This leads to the observation that a nation may be more stable if it controls an entire geographical unit—the headwaters as well as the alluvial valleys of its rivers. Cooperation, rather than conflicts for food supply, is then possible, assuring a more lasting culture. Furthermore, this tremendous silt problem of the ages may be lessened when a nation controls the catchment areas of its streams and understands the relationship between floods and silt on the plains and denudation and erosion of the uplands and watersheds. In the United States, despite the rapid exploitation of our sloping farm and grazing lands, little provision was made for silt control. The first real steps for silt control did not begin until the Soil Conservation Act of 1935 and the Omnibus Flood Control Act of 1936.

But there is more involved in the maintenance of a civilization than methods of land use, vital as these are. Much depends on national organization, justice in administration and righteousness in government. The growth of crops and the growth of the spirit are akin. Individual and national prosperity continue only when the lands upon which the people depend for food are maintained in a condition of sustained productiveness. The fate of a civilization is dependent upon tillers of soil. Sometimes a few generations can, and do, so wreck the lands and national resources of a people by taking off the cream and leaving only "skimmed milk" for those who follow, that the "Golden Age" of prosperity changes to one of poverty and lower standards of living. Such decadence invites invasions and conquests.

Out of the injustices, sorrows, broken spirits and ashes of vast populations and vanished civilizations let us extract that which will give us the greatest assurance of longevity to our nation and our culture.

"Where there is no vision, the people perish," is as true today as when proclaimed by the prophets of old. To maintain and sustain a civilization, the people must have an overpowering objective demanding their allegiance. It must be altruistic, looking beyond individual interests of today so that it partakes of a religious zeal or responsibility with its complete fulfillment in the future. But at the same time it must consist of concrete projects and tasks which can be undertaken and carried out by the people, unfolding an inclusive objective. Conservation of national resources, both material and human, should become our vision and goal.

Since older civilizations have been brought to ignominious ends by exploitation and destruction, which wiped out physical and spiritual values and the glories and works of multitudes of people, let us seek an objective of construction rather than destruction. Thirty years ago, Nathaniel Shaler, noted geologist of Yale, attempted to arouse the American people by saying: "Of all the sinful wasters of man's inheritance on the earth, and all are in this regard sinners, the very worst are the American people." Only upon the conservation of our basic resources of land, water, and the spirit of the people can we maintain the human values of high living, opportunity, freedom, justice and faith in the destiny of our nation. We must be ready and able to defend our purposes against all attacks.

Our soil erosion, grazing and forest surveys are a "handwriting on the wall" to warn our nation. Our soil survey shows that we have permitted erosion to destroy for further cultivation an area of our good lands greater than the State of Kansas, and that 200,000,000 acres of farm lands are eroding faster than soil is forming. More than 700,000,000 acres of grazing lands have been seriously depleted and millions of acres of forests have been left desolate. We have made but a mere beginning in conservation. Our lands need the labors of a vast army of men for many years in order to reclaim and maintain them for a permanent use.

Out of our vast stored resources our nation has grown to prosperity and power. Henceforth, we must live on the maintenance of our remaining resources or else we as a nation shall exchange our prosperity for decadence and lower standards of living. A tragic fate has already befallen many tillers of erosion ruined farm lands, whose fields have turned to rocks or become riddled with gullies. The vast agricultural and irrigation ruins of former glorious civilizations in North Africa, and these older lands of Asia Minor, and the decadence of human and spiritual values make vivid to us the possible end of a people. A permanent agriculture is vital to the rise and maintenance of a civilization as well as to a rapid recovery after invasion. The aggressor nations of today, who claim they are destined to dominate the world with their ideas, by force and conquest of other lands, first laid deep foundations for themselves in a permanent agriculture. In Germany, land use and sustained use of forests are models of efficiency. Twenty years ago it was thought Germany was crushed; today, she dominates all Europe, threatening the peace of the whole world.

The possibilities of the earth when its resources are fully husbanded in the advanced knowledge of full conservation are beyond the imagination of mankind in general. If the vast energies of the human race could be directed toward a goal of conservation rather than toward destruction, I hazard the suggestion that the earth would yield sufficient to meet the requirements of this generation and the human increase for centuries to come.

The world has become more dangerous for our high purposes and ideals. We are the objects of envy; our wasteful land use only invites invasion by land hungry people, whose trade with us is hampered by our high tariff walls. Our national defense must protect not only our shores from invasion, but our ideals of liberty, freedom and justice. But the heart of the national defense is the protection of our lands from the enemy of soil erosion.

The rise and fall of empires and civilizations has often been a record of the vanity of kings. We may well feel that the vanity of dictators, in their desire to dominate the world, may exploit their followers, just as Mohammed did, by giving them the sword and a religious zeal. It is possible that Hitler and Japan together, with their self-made convictions of race destiny, have turned loose the annihilating fury of modern warfare, which will plunge our vaunted modern civilization into the mausoleum of vanished cultures.

We have seen the tragic end of great empires where, in dust and ashes, lie the broken achievements of mankind and wrecks of material and spiritual gains of human progress and freedom won after thousands of years of struggle. The fate of our liberties in America, attained after centuries of struggle, are threatened. The sword of Damocles at this moment hangs over civilization. We must have enduring faith and courageous action to fulfill the destiny of our people in America to establish on this earth a lasting civilization "of the people, by the people, and for the people."

An economical, practical solution to a Southwest land-clearing problem. International TD-18 Diesel TracTracTor equipped with bulldozer, owned by the Middle Rio Grande Conservancy District, leveling land for irrigation near Albuquerque, New Mexico.

"Civilizing" the Rio Grande with INTERNATIONAL TracTracTors

Conservationists, lumbermen, and farmers are solving the job of clearing land infested with stumps, brush, and "trash" or "weed" trees with International TracTracTors equipped with bulldozers and special toothed land clearing blades.

An unusual land clearing project with an International TD-18 and bulldozer has been inaugurated by the Middle Rio Grande Conservancy District whose headquarters are in Albuquerque, New Mexico. Since October, 1939, the Conservancy District has cleared or agreed to clear 1,400 acres. Average cost is $30 an acre.

In an 18-acre field near Albuquerque, some 200 cottonwood trees, varying from one foot to one and a half feet in diameter, were knocked down by the TracTracTor. The wood was sawed into firewood lengths. Stumps were pushed into a long pile or windrow where they were burned. The final operation was to smooth the land for irrigation.

International TracTracTors are doing economical work in many other phases of land clearing, reforestation, and flood and drainage control work. Many others are on the job building and maintaining roads in state and national parks.

Ask the nearby International Industrial Power dealer or Company-owned branch to give you full information about International TracTracTors—both Diesel and carburetor-type.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago, Illinois

INTERNATIONAL Industrial Power

CONSERVATION IN CONGRESS

BY WORKING at breakneck speed in the last few days of June, Congress disposed of the tremendous backlog of departmental appropriation bills and other important legislation by July 1, the beginning of the 1942 fiscal year. On June 23, the Senate adjourned for three days to enable many members of that august body to attend the funeral services of the late Senator Pat Harrison of Mississippi, for many years a highly respected Senate leader. Several appropriation bills were then rushed through in long sessions on June 28 and 30, the deadline.

Considering the fact that this Congress is spending unprecedented sums on national defense, appropriations for forestry and conservation work fared well. Appropriation acts for the 1942 fiscal year, now approved by the President, include approximately $850,000,000 for expenditure on conservation activities of the federal government as compared with about $830,000,000 in the 1941 fiscal year, a two per cent increase. While most important forestry and conservation items in the Department of Agriculture and the Department of the Interior appropriations received increases, the Civilian Conservation Corps appropriation was reduced by $33,034,900, due to increased national defense activity using boys of enrollment age.

As finally approved by President Roosevelt on July 1, the Agricultural Appropriations Act, now Public Law No. 144, contains a $350,000 item for Dutch Elm disease control, a decrease of $50,000 over last fiscal year. Congress appropriated nearly $500,000,000 for benefit payments to farmers for soil conservation practices, an increase from last year of approximately $37,500,000. Other forestry and conservation items in the Agricultural Department appropriation remained at the conference report figures as reported in the July issue of AMERICAN FORESTS. The $150,000 increase granted forest products research will be used by the laboratory to investigate the use of wood and plywood in airplane construction. It should also be pointed out that Congress transferred the following sums from the respective projects to the Bureau of Agricultural Economies: national forest protection and management, $14,411; private forestry cooperation, $1,558; forest survey, $2,337; forest fire cooperation under the Clarke-McNary Act, $7,790; acquisition of lands for national forests, $9,348; forest roads and trails, $34,665; soil conservation service, $58,425; and benefit payments for soil conservation practices, $467,451.

Contained in the Works Progress Administration Appropriation Act, approved July 1, and now Public Law No. 143, is an $8,500,000 item for federal non-construction projects. Of this amount, $3,500,000 will be available during the remainder of the 1941 calendar year for the continuation of existing projects in the Department of Agriculture. If allocated on the same basis as in previous years, the Bureau of Entomology and Plant Quarantine will receive $2,350,000, of which $841,000 will be spent for Dutch elm disease eradication; $625,000 for white pine blister rust control and $329,000 for gypsy and brown-tail moth work. The shelterbelt project may be allocated as much as $600,000. It is estimated that these amounts will be sufficient to continue these projects on the same basis as in the last fiscal year, until December 31, 1941.

On June 28, President Roosevelt transmitted an executive communication to Congress providing for a $1,100,000 deficiency appropriation for use of the Forest Service in fighting forest fires on private, state, county, municipal and Federal lands during the 1942 fiscal year. Attached by the Senate as an amendment to the Second Deficiency Appropriation Act, approved July 3, now Public Law No. 150, this amount will be used "to intensify and augment forest fire prevention and

(*Continuing on page 395*)

CONSERVATION IN THE 1942 APPROPRIATION ACTS

Appropriation and Project		1942 Appropriation	1941 Appropriation
Department of Agriculture			
Forest Service		$18,589,609	$18,047,955
General Administrative Expenses		598,520	598,520
National Forest Protection and Management		11,050,411	11,500,000
Fighting Forest Fires		100,000	100,000
Private Forestry Cooperation		99,558	100,000
Research—Forest Management		605,000	605,000
Range Investigations		270,935	270,935
Forest Products		782,500	632,500
Forest Survey		249,337	250,000
Forest Economics		140,000	140,000
Forest Influences		135,000	135,000
Forest Fire Cooperation		2,425,000	2,200,000
New England Hurricane Damages			300,000
Acquisition of Lands for National Forests		1,797,348	1,000,000
Acquisition of Lands from Receipt Funds		316,000	71,000
Soil Conservation Service		23,516,775	18,792,540
Miscellaneous—Department of Agriculture			
Cooperative Farm Forestry		700,000	400,000
Includes:			
Extension Service	$107,000		
Forest Service	459,901		
Soil Conservation Service	133,099		
Dutch Elm Disease		350,000	400,000
White Pine Blister Rust Control		1,284,000	1,044,000
Includes:			
Bureau of Entomology and Plant Quarantine	483,332		
Forest Service	685,668		
Department of the Interior	115,000		
Gypsy and Brown-Tail Moth		375,000	375,000
Forest Insects—Studies and Control		212,500	212,500
Diseases of Forest Trees		255,000	245,000
National Arboretum		54,587	54,587
Naval Stores Investigations		115,400	93,400
Benefit Payments for Soil Conservation Practices		499,388,671	.....
Department of the Interior			
Fish and Wildlife Service		8,281,500	8,600,418
National Park Service		5,588,775	4,964,280
Grazing Service		1,125,000	1,000,000
Soil Conservation—Public Lands		2,178,700	.....
O and C Lands		200,000	150,000
Prevention of Fires in Alaska		27,000	27,000
Indian Forests:			
General Administration		385,000	398,640
Sale of Timber		117,000	117,000
Suppression of Forest Fires		15,000	45,000
General Public Works			
Roads and Trails—Forest Service		9,990,165	9,000,000
Roads and Trails—National Park Service		3,000,000	2,125,000
Blue Ridge, Natchez Trace and George Washington Memorial Parkways		6,000,000	2,000,000
Civilian Conservation Corps		246,960,000	279,994,900
Tennessee Valley Authority (Forestry, Wildlife, and Recreational Development)		606,000	660,000

New National Forest Purchases

Approval for final purchase of 112,870 acres—385 tracts involving lands in twenty-three states and Puerto Rico—for national forest purposes was announced on July 1 by the National Forest Reservation Commission. Favorable action was taken in 281 cases on the purchase of 96,554 acres with Weeks Law funds, and 104 cases, totalling 16,316 acres, were approved for purchase with forest receipt funds. Total purchase price for lands approved was $399,446.

Of particular interest was the Commission's favorable action in cooperating in the purchase of 213 acres within the Patoka National Forest Purchase unit in Indiana—the so-called Cox Woods, described elsewhere in this issue. The tract contains a ninety-acre virgin grove typical of the magnificent forest that once covered the region, and has a value of $23,000. The Commission approved purchase at a price not exceeding one half of its value, or approximately $12,000. The remaining cost will be met by private contributions, of which $15,000 has already been raised. The tract will be added to the proposed Benjamin Harrison Memorial Forest.

A major portion of the lands approved for purchase are to be added to national forests in the Appalachian, Southern Pine, and Ozark and Central Mississippi regions and consist mainly of cutover and second-growth forest areas. In the national forest system, these lands will be placed under intensive protection and management to restore and perpetuate the forest resources.

Largest group purchases approved by the commission are those to be added to the Allegheny National Forest, Pennsylvania, 14,175 acres, Angelina National Forest, Texas, 14,036 acres, DeSoto National Forest, Mississippi, 13,004 acres, and the Jefferson National Forest, Virginia, 10,652 acres. In Tennessee, the Cherokee National Forest will acquire sixty acres of private land within its Game Refuge No. 1, and in Alabama, the Talladega National Forest will add forty acres within the Choccolocco Wildlife Management Area to help consolidate both game areas and to simplify their administration.

Land purchases in Arkansas will for the first time employ forest receipt funds under the provisions of a Congressional Act of March 5, 1940, which stipulates that up to one-half of all the receipts obtained by the Ouachita and Ozark National Forests from timber sales, grazing and all other special uses, except minerals, may be appropriated for the purchase of lands necessary to the program of soil-erosion and flood control in Arkansas. The Commission acted favorably on 100 tracts involving 11,181 acres of land which fall into this category. Also to be purchased with forest receipt funds are 5,135 acres, similarly important from a soil-erosion and flood control standpoint, in the Uinta, and Wasatch National Forests, Utah.

New Alabama Policy

Adequate state-wide forest fire control and education of forest landowners on proper methods of cutting timber and minimum forest management practices, are provided in a new forest policy for Alabama, adopted on June 17 by the State Conservation Commission.

Every effort will be made to place all of Alabama's forest land under intensive fire control. Forest lands now under extensive control will be placed under extensive protection. This comprises advising and informing landowners and the general public of damage caused by fires, procedures to prevent fires and the latest and most practical method of fire suppression.

As part of the educational program for landowners, the Conservation Commission recommends the following minimum standards to assure restocking and protection of existing growth.

"(1) In any cutting operation leave six thrifty seed trees per acre, of the predominant merchantable species, unless adequate young growth is present. No seed trees shall be left farther than 200 feet apart.

"(2) No trees smaller than eight inches at the stump shall be cut except where adequate young growth is present, or where thinning practices are needed.

"(3) Clear cutting shall not be done except on lands to be devoted for bona fide agriculture, or pasture purposes.

"(4) All worked out turpentine trees should be removed but in hanging new cups the minimum of six seed trees shall be left round.

"(5) No trees to be cut if there are not enough to follow the above rules.

"(6) A forest management plan which provides for adequate reproduction will be acceptable in lieu of all or any of the foregoing conditions."

In addition the State Department of Conservation will aid landowners in the control of tree insects and diseases; furnish forest planting stock to farmers and other landowners; cooperate with public research agencies dealing with the solutions of forest problems; inform the public of the importance of the forest resources and methods whereby the value of the resources can be maintained and increased; improve or rectify unfair and improper taxation of forest resources, and assist landowners in every way possible.

NEW BOOKS

NATURE IS STRANGER THAN FICTION, by John Y. Beaty. Published by J. B. Lippincott Company, Philadelphia, Pa. Illustrated. 286 pages. Price, $2.50.

This is a collection of astounding facts about nature. The author has delved into every phase of nature in search of oddities, and this book contains close to 400 accounts.

Here is one entitled "The Bride Breaks Her Lover's Fiddle So He Can Woo No Other." The story goes like this: "The female of the European field cricket will not allow her mate to woo another maiden. The wooing is done by use of a fiddle which is a part of the male's wings. After a female has accepted him, she tears the wings of her lover and breaks his fiddle so that never again can he play for the enticement of another female cricket. That's an effective way to keep her husband at home evenings."

Other accounts tell about "Rust That Lifts a Building an Inch a Year," "Stowaway on a Bee," "A Year to Digest One Meal," "Flowers Without Roots, Stems or Leaves," "This Lady's Perfume Attracts Males for Miles."

The marvels described in this book certainly serve to increase one's respect for nature, and make more urgent the wish to learn more about it.

MODERN WILDERNESS, by William Arthur Babson. Published by Doubleday, Doran and Co., Inc., New York. Illustrated. 261 pages. Price $3.00.

Modern Wilderness is composed of a wealth of anecdotes telling about the author's adventures in the world of nature. Most of his stories take place in a little wilderness area in New Jersey within twenty-five miles of the largest population center in North America. Crossed by four and six-lane highways, this sanctuary of woodlands, swamps and streams is little known and is passed unnoticed by the traveling thousands, but it is the stopping place of waterfowl, the nesting site of songbirds, and the habitat of aquatic life.

Written in a pleasant and easy style, this book will give pleasure to all who enjoy the out-of-doors.

THE AUDUBON GUIDE TO ATTRACTING BIRDS, edited by John H. Baker. Published by Doubleday, Doran and Company, Inc., Garden City, N. Y. Illustrated. 268 pages. Price, $2.50.

The writing of this book has been shared by Roger T. Peterson, Richard H. Puogh, and John H. Baker, all of the executive staff of the National Audubon Society. Dorothy A. Treat, who has made outstanding accomplishments in community projects for bird preservation, is the author of a chapter; and Robert C. Murphy, honorary president of the National Audubon Society, has written the foreword. Also, aid in preparation has been rendered by Margaret Brooks, editor of *Audubon Magazine*, and Alexander Sprunt, Jr., well known for his activity with Audubon southern bird sanctuaries.

Crammed with helpful and interesting suggestions for attracting and increasing birds, this work is the result of long years of experimentation. It contains chapters dealing with bird photography and banding, attracting by planting, attracting by providing nest boxes, attracting waterfowl, our attitude toward predators, maintenance of sanctuaries, and many other subjects that bird lovers are always wanting to know about.

CONSERVATION OF AMERICAN RESOURCES, by Charles N. Elliott. Published by Turner E. Smith & Company, Atlanta, Ga. Ills. 672 pages. Price $1.80.

Written in simple language, this book covers in an interesting way many phases of conservation. Each chapter concludes with an exercise making the book especially adapted to the use of teachers, but it also will prove valuable to anyone interested in conservation.

Lavishly illustrated, it is also packed with quotations from such leading conservationists as J. N. Darling, Arno B. Cammerer, W. C. Lowdermilk, and the late F. A. Silcox.

New State Forester

Paul A. Yost, associate state forester, has been named state forester of Indiana, succeeding H. A. Woods. A graduate

Paul A. Yost

of the Pennsylvania State School of Forestry, Mr. Yost has been associated with the Division of Forestry, Indiana Department of Conservation, since 1935, first as district forester, then as associate forester.

CONSERVATION CALENDAR

Important Bills in Congress With Action—June 18 to July 1, 1941

BILLS ENACTED

H. J. Res. 193—WOODRUM—Emergency Relief Appropriation Act for the fiscal year 1942. Passed House June 13, 1941. Passed Senate amended June 20, 1941. In Conference June 23. Signed by the President July 1, 1941. Public Law No. 143.

H. R. 3735—CANNON—Appropriations for the Department of Agriculture for the fiscal year ending June 30, 1942. Passed House March 6, 1941. Passed Senate amended April 3, 1941. In Conference April 17, 1941. Signed by the President July 1, 1941. Public Law No. 144.

H. R. 4926—TARVER—Making appropriations for the Department of Labor, the Federal Security Agency and related independent agencies for the fiscal year ending June 30, 1942. Passed House June 5, 1941. Passed Senate amended June 19, 1941. In Conference June 20, 1941. Signed by the President July 1, 1941. Public Law No. 146.

H. R. 4590—TAYLOR—Making appropriations for the Department of the Interior for the fiscal year ending June 30, 1942. Passed House May 14, 1941. Passed Senate amended June 3, 1941. In Conference June 5, 1941. Signed by the President June 28, 1941. Public Law No. 136.

FORESTRY

H. R. 4137—FULMER—To extend the benefits of the Act of August 29, 1935, relating to federal assistance in the acquisition and development of state forests, to counties, municipalities, and other political subdivisions. Reported without amendment by the House Committee on Agriculture (No. 787) June 18, 1941.

NATIONAL FORESTS

S. 852—MCNARY—To provide for the acquisition of certain lands for and the addition thereof to the Deschutes National Forest, Oregon. Passed Senate June 30, 1941.

S. 1684 — SHIPSTEAD — Providing for equalization of taxes in counties wherein national forest lands are located. Introduced June 28, 1941. Referred to the Committee on Agriculture and Forestry.

PAYMENT TO STATES

H. R. 5222—MOTT—To provide for a uniform method of payments to the several states on account of certain lands of the United States. Introduced June 30, 1941. Referred to the Committee on the Public Lands.

Conservation in Congress

(*Continued from page* 388)

suppression measures in critical areas," and is additional to the $2,425,000 Clarke-McNary appropriation for cooperative forest fire control. Where used on state and private lands, these deficiency funds must be matched by an equal amount from the State and private forest land owners.

As we go to press allocation of the $1,100,000 has not been determined but it is probable that $500,000 will be used for emergency forest fire operations in California; $500,000 more in Oregon and Washington combined; and the remaining $100,000 for emergency use in States east of the Mississippi. It is quite likely that the $1,100,000 will be divided equally between national forests and state and private lands.

The Interior Department Appropriations Act, Public Law No. 136, was approved by the President June 28. Forestry and conservation activities fared well with a total of $26,917,975, a $7,490,637 increase over the 1941 fiscal year. The National Park Service appropriation was increased $624,495 to a total of $5,588,775. The item for continued construction of the Blue Ridge, Natchez Trace and George Washington Memorial Parkways was placed at $6,000,000, an increase of $4,000,000; and National Park Service roads and trails received an increase of $875,000 to a total of $3,000,000. The Fish and Wildlife appropriation was cut $318,918 to $8,281,500. Soil conservation activities on Interior Department lands received a total of $2,178,700.

Containing an authorization of $10,000,000 to make effective the State Forest Acquisition Act of 1935, Representative Fulmer's bill, H.R. 4137, was reported by the House Committee on Agriculture June 18. Not more than $2,500,000 can be appropriated in any fiscal year. Provision is made to extend the benefits of this Act to counties, municipalities, communities and other political sub-divisions.

Providing for annual payments in lieu of taxes to counties in which privately owned lands have been acquired by the federal government for flood control and navigation projects, H. R. 5093, introduced by Representative Cartwright, of

(*Continued on page* 398)

Experience in Timber Growing

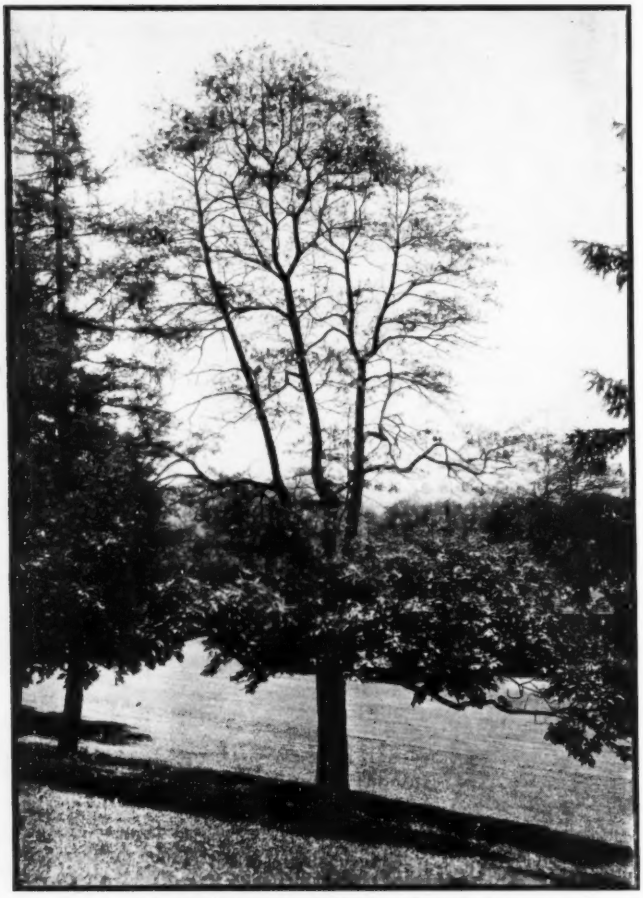
(*Continued from page* 383)

balsam fir. This work, which was begun as a hobby, he now believes to be good business. Recently Mr. Condon began pruning in an experimental way but does not yet charge the cost against timber growing. Pruning operations, like weedings, may prove to be good business under certain conditions in the production of high quality sawtimber.

Mr. Condon's remarkable success in forestry has been achieved in spite of difficulties that have discouraged others. For example, white pine blister rust has taken a heavy toll of his pine trees. He has had to fight this disease almost alone for, unfortunately, he cannot obtain help from the town as it has not taken advantage of the cooperation offered by the state and the federal government in eradicating this disease. Also, when the spruce budworm struck this section of Maine, the future of his forest enterprise for a time looked black indeed; but because of the unusually healthy condition of his stands, losses were light. The ability to log infected or dead trees and utilize them at his small sawmill has enabled him to cope successfully with these epidemics. Serious problems of forest management, Mr. Condon has learned, can usually be solved by keeping plans flexible and by trying new ideas whenever old ones must be discarded.

"Although I am over sixty years old," Mr. Condon said, "I am planning for this forest as if I would live another hundred years. There will always be a market for high quality timber and somebody will appreciate the fact that I have left a fine forest instead of valueless, clean-cut woodlots."

So, like other pioneers, Mr. Condon can look back upon the trail he has blazed with great satisfaction and plan for the future with the full confidence that only experience can bring.



A sassafras, one of the favorites of the Japanese beetle, almost entirely defoliated

YOUR SHADE TREES

AND THE JAPANESE BEETLE

By DEVEREUX BUTCHER

Photographs by U. S. Bureau of Entomology

LATE July and early August form the peak of the feeding season for the Japanese Beetle, a fifth columnist that entered the United States about the year 1916 and has since spread over the eastern United States. Along the coastal plain between the Potomac and Connecticut rivers its numbers have become so great that it has become a saboteur of plant growth of the first rank.

That it is a voracious feeder upon the leaves, flowers and fruits of many plants is all too well known in this section where it is the despair of home and commercial gardeners alike. It has been found feeding on over 260 different plants. But it does have plant preferences.

What of its appetite for shade and ornamental trees? Here as with flowering plants and vegetables it favors certain trees and here its populations have become heavy; it is now a serious menace to these species. A ravenous defoliater, it feeds on the upper and outer parts of the leaves, particularly those exposed to bright sunlight, and may destroy a tree's foliage within a few days or weeks, depending upon the intensity of the attack. The tree may not be killed outright but it is greatly weakened, and of course repeated annual defoliation hastens its ultimate death.

Since the beetle was first discovered in Burlington County, New Jersey, it has spread by both natural means and by transportation of plant stock on boats, trains and automobiles until now it is known from Maine south to Georgia and west to Missouri. In the more distant parts of this range the beetle is still scarce, and is not yet a problem to owners of shade trees. Indications are, however, that it will become established in most of the country east of western Kansas because the climate in this area is similar to that of Japan. Winter temperatures from northern New England west to the Dakotas may be too cold to permit survival there.

The beetle, greenish bronze in color, with two tufts of white hairs behind its wing covers and five patches along each side of its body is easily identified. Its feeding season upon plants is from June through September. It spends the rest of the year underground in the egg, larval and pupal stages, and while in the larval or grub stage feeds on the roots of grass and other plants.

Ornamental or shade trees preferred by the beetle include elm, horse-chestnut, linden, Lombardy poplar, willow, Norway maple and sassafras. Pin oak, planetree, oriental flowering cherry, and white birch are also eaten, but to a lesser extent. Trees rarely attacked include all evergreens (except cypress), Carolina poplar, locust, dogwood, catalpa, sourgum, sweetgum, redbud, white poplar, all oaks except pin, and all maples except Norway and Japanese. To the list of attacked species can be added several ornamental shrubs, and plants such as barberry, Virginia creeper, canna, hollyhock, marshmallow, zinnia, dahlia, and also the blooms of butterfly bush, varieties of snapdragon, and many roses.

The rapid spread and increase of the Japanese beetle is due not only to favorable environment, but to the lack of natural enemies. For several years research

has been under way to discover and bring to America the more important parasites of the beetle. Two of these, both of them a small species of wasp, have been established in the heavily infested area by the Department of Agriculture. Though it is hoped that these enemies will spread and bring about the natural control of the beetle, this is yet a long way from accomplishment, and the shade tree owner must employ artificial means of control.

Among the methods recommended, the use of the beetle trap is easiest. Obtainable from hardware and seed stores for a dollar or less, it consists of a four-winged baffle above a funnel attached to a glass jar. With the metal part painted bright yellow, and baited with a highly scented mixture of ten parts geraniol and one part eugenol, it depends upon the air currents for effectiveness, and should, therefore, be placed away from buildings and vegetation. The trap may draw beetles from some distance and for this reason little benefit may be derived unless the whole community engages in trapping.

Japanese beetle, about twice natural size

Several sprays are recommended by the U. S. Department of Agriculture in Farmer's Bulletin No. 1856—"The Japanese Beetle and Its Control," obtainable from the Superintendent of Documents, Washington, D. C., for five cents. For use on tall trees it is necessary, of course, to employ high-pressure pumps. Soap sprays which have proved satisfactory, perform through contact, and their effectiveness, therefore, depends upon the beetles becoming thoroughly drenched. One such spray, obtainable from reliable dealers in insecticides, is composed of sodium oleate and an alcoholic extract of pyrethrum flowers. Or a spray made of commercial fish oil soap, or a good grade of household soap—one pound of soap to three or four gallons of water may be used. The best time of day to apply these sprays is during the hours when the sun is brightest. Though large numbers of beetles may be killed by these sprays, they do not prevent foliage from becoming reinfested, because they leave no repellent residue on the leaves. It is well to remember that too frequent applications of soap sprays will cause some injury to foliage.

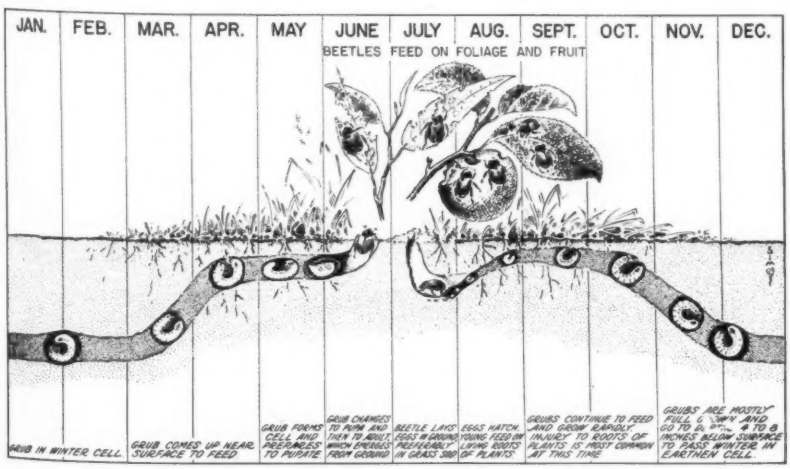
The most effective sprays are the repellent ones. The one recommended for shade trees by the Department of Agriculture is as follows:

Lead Arsenate (powdered)	10 oz.
Wheat flour	6 oz.
Water	10 gal.

Care must be taken in handling this spray because it is poisonous to both man and animals. Spraying should begin as soon as the beetles appear.

Since great numbers of grubs in the lawn kill the grass by feeding upon the roots, protective measures should be taken. Here again lead arsenate mixed with twenty-five times its volume of moist sand or soil may be applied by hand or with a hand-operated fertilizer distributor. If applied by hand, gloves should be worn. In mixing, care should be used not to inhale the powder. After application, the lawn should be well watered to wash the poison into the ground. Treated thus, a lawn will remain immune to beetles for about five years. Hydrated lime or stone lime must not be applied after this treatment, because it will lessen the efficiency of the poison. Handle this poison with great care, and do not allow children to play on the lawn, or dogs to feed there, until the poison has been entirely washed into the turf.

For advice in connection with your own particular problems, and in mixing sprays, get in touch with your local tree expert, your state entomologist, state agricultural college or state agricultural station.



This diagram shows the life history of the Japanese beetle

Conservation in Congress

(*Continued from page* 395)

Oklahoma, is in line with Joint Congressional Forestry Committee Recommendation No. 12. Annual payments would equal the amount of taxes such lands would have netted the county if they had remained in taxable private ownership.

Amending the Tennessee Valley Authority Act, H. R. 2097, recently passed by the House and Senate and now in conference, authorizes the TVA to convey by deed, lease or otherwise, land under its jurisdiction to individuals for recreation purposes such as resorts for boating, fishing, bathing, and for summer homes. Such authority, contained in the original TVA Act, expired August 31, 1940.

Canal

(*Continued from page* 367)

this area well suited for nature walks and canoe trips.

Thus, the old canal has acquired a future; perhaps not one so romantic as its somewhat dramatic and historic past, but, as a recreational waterway maintained and supervised by the National Park Service, the facility will bring pleasure to thousands of persons who seek wholesome recreation and relaxation in hiking, boating, and contact with nature. Already, authorities from states in which other forgotten canal properties are located are studying the C. & O. project, and it is possible that similar recreational waterways, designed after the C. & O. Canal pattern, may be developed along the routes of other former canals.

The present plans for the reconstruction of the canal do not extend beyond Seneca. Stalemated by cost barriers, the future of such projects is veiled in uncertainty, but it is the hope of all who are familiar with the old canal, who know its beauty, its history and its recreational possibilities, that the work will go on.

Michigan Roadsides

(*Continued from page* 380)

The history of the roadside picnic table is rather interesting. In 1931, the old style wooden guard rail was dismantled because in some accidents, boards from these guard rails were driven completely through car radiators and into the car interior, adding to the seriousness of the mishap. When the problem of salvaging the old boards was being considered, the suggestion was made that picnic tables be built and placed along the roadsides. The idea was well received by the public but no extensive program was undertaken until 1935 when the present rustic type table was first built. These met with such

popular approval that during the past summer there were over 3,500 of this type along our roadsides.

In placing picnic tables, there are some very definite rules to be followed. Ample shade, of course, is one of the main considerations. The safety factor is also important and calls for locations where there is ample room for cars to park. Locations on the inside of curves and too near the tops of hills are avoided. As a rule, locations elevated slightly above the road grade are selected to give users a greater sense of security. Tables are not placed too close to farmyards, business places, fruit orchards and other points where users might be tempted to molest adjacent property. Picnic table approach signs are placed only on the side of the road on which the table is located, to discourage motorists cutting across the highway. This policy is balanced by an effort to place an equal number of tables on each side of the road. Also, a table or two is usually placed at rural school house sites because of toilet facilities available.

The small modestly landscaped areas along Michigan highways commonly referred to as roadside parks offer more extensive accommodations to highway users than do roadside picnic table areas. They provide a place where groups may gather to picnic and otherwise enjoy a period of recreation and relaxation. Roadside parks also afford weary motorists an opportunity to stop and refresh themselves, later returning to the highway in a more alert mental condition. An interesting sidelight concerning group activity took place last summer in the park area on US-16 at the Red Cedar River near Williamston. A family reunion was arranged by relatives living in Grand Rapids and Detroit. In order that the task of driving would be equally shared, this little roadside park was selected as the central meeting point. The stoves and water available in addition to tables, contributed to an enjoyable day by the group.

These areas are usually two acres or less in size and are frequently built on land conveyed to the State Highway Department during right-of-way negotiations. Accommodations provided at these sites include adequate shade, well maintained lawn areas, drinking water, toilet facilities and provision for safe parking. Selection of locations for roadside park sites is based on the volume of passenger car traffic the road carries, the geographic location of the proposed site in relation to similar areas, existing natural features such as shade trees, streams, flowing wells and scenic views; accessibility of the area from the road, and the cost of developing the area. Present opinion is that they should be available at intervals of thirty-five to fifty miles on the more important tourist trunklines.

The fourth utilitarian contribution of a roadside development program is in the form of projects which will contribute to a lowered cost of maintaining the highway right-of-way. Perhaps the most important of these is erosion control. Considerable money is expended by the highway department each year to correct improper drainage conditions and in culvert clean-out work. Much of this activity is necessary because eroded backslope material is carried into these structures. Sodding has been standard practice in the past, but there are unlimited possibilities for highway foresters to determine additional economical methods of controlling erosion. The experimental projects being carried on by the Soil Conservation Service in the western dust bowl section may prove helpful through development of hardy grasses which can be adapted to Michigan soil and climatic enviroment.

The fifth and last objective deals with the landscape improvement of highways. In any discussion of what constitutes the proper method of developing a highway roadside, it is necessary to recognize certain restricting factors affecting such development. In the first place, the highway right-of-way in relation to the surrounding countryside constitutes a rather narrow lane over the topography, which excludes complete freedom in applying the usual landscape principles. Secondly, the majority of scenic views are directed toward features some distance from the highway. Thirdly, possibility of future widening must be given consideration. Fourthly, the presence of utility company pole lines within the highway right-of-way eliminates promiscuous planting beneath their structures. Lastly, the fact that most state trunkline highways may be classed as high speed traffic arteries rather than parkway drives further modifies development activity.

In view of these factors, it is advisable to approach the problem of roadside landscaping from a utilitarian standpoint. The utilitarian features which should form the basis for a landscape plan are, first, the placing of plantings in locations which will indicate to approaching motorists a change in highway alignment such as the outside of curves. Trees should also be sufficiently frequent on straight-of-way sections to outline the roadway and planting should be omitted where it is apt to interfere with vision. Unsightly objects can be screened from the highway right-of-way by planting treatment. Consideration should be given to locating trees so that they will shade the highway. Finally,

plantings should be arranged in a manner which will make economical maintenance possible. These requirements form the basis for the development of rural roadsides.

In Metropolitan sections, where there are divided lane highways, more freedom is possible in developing the center panel between the two sections of pavement. Under such conditions groupings of interest and specimen plants in this center area are possible. Because such highways often pass through subdivided and commercial sections, planting at the back edge of the right-of-way must be done with consideration to future service driveways, the establishment of business and dwelling places and allowance for future sidewalks.

Something New Among the Alders

(*Continued from page* 337)

be reported is the reason for this story.

A further hope might appropriately be expressed; namely, that a specimen of each of the varieties of cut leaf alder additional varieties if and when found could be added.

Perhaps through such close observation as would thus be afforded, a knowledge of

Calling cards of the Queen of the Cutleaf Alders (the "Fernleaf" tree, center) and her Court. Upper left, the "Railroad" tree and, right, the "Lakeside" tree; lower left, the Court Jester—the "Brookside" tree (note the curlique on his cap) and, lower right, the Court Knave—the "Hilltop" tree. Can these new alder forms be the answer to the horticulturist's prayer for a new tree?

described in this article be planted in the arboretum of the University of Washington, where their growth and forms could be watched and studied from year to year. To such an arboretum grouping, these new and vagrant species could be amassed that would make possible the development and general propagation of a tree of great ornamental value and wide distribution.

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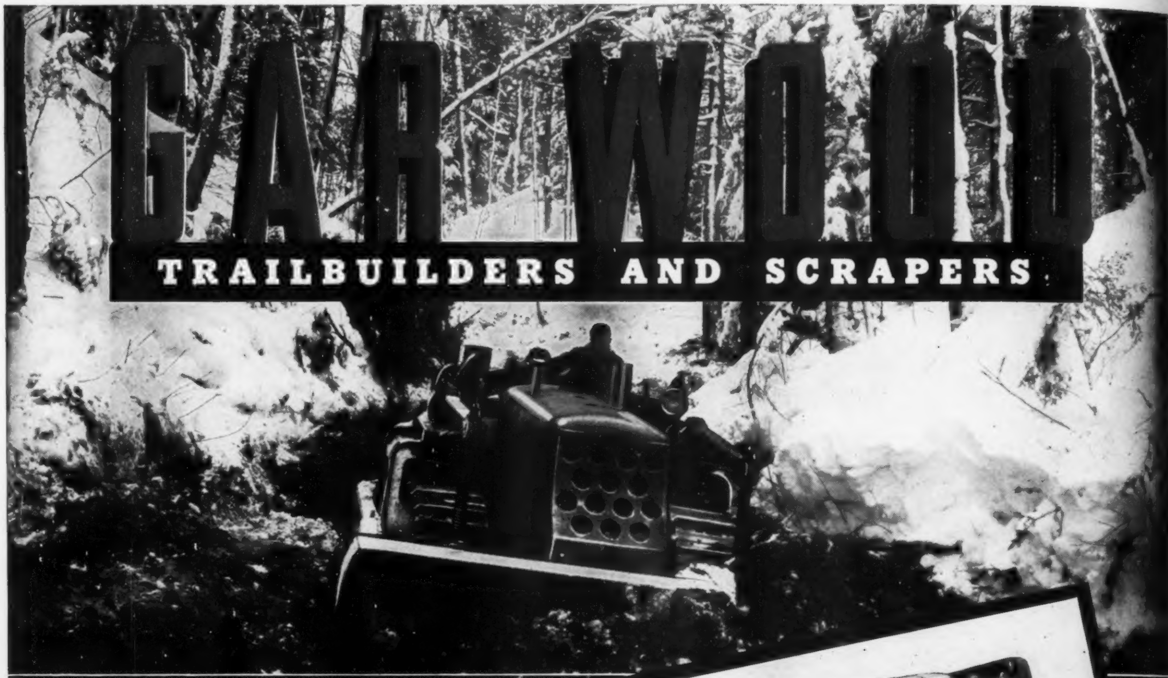

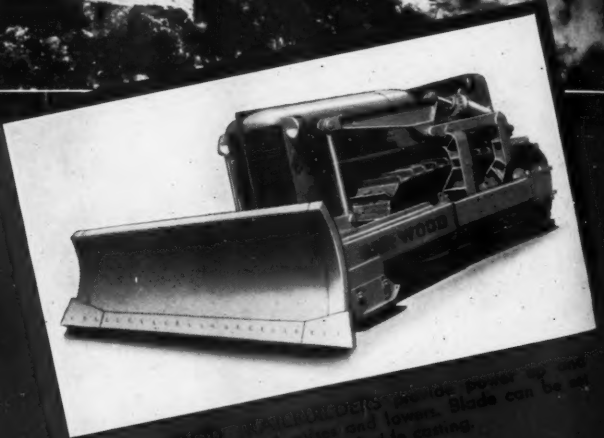

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